

Who Avoids and Who Escapes from Poverty during the Transition?

Evidence from Polish Panel Data,
1993–96

Włodzimierz Okrasa

There is a tendency toward chronic, long-term poverty in Poland. Most at risk: larger households, farm households, and households dependent on social welfare. Least at risk: households of employees or the self-employed, educated households, households headed by pensioners, households that are part of kinship networks, and households with liquid assets, durables, or access to financial resources. Among those who missed out on the benefits of the first phase of economic prosperity, children are overrepresented.



Summary findings

Okrasa uses four-year panel data from Poland's Household Budget Survey to explore the distinction between transitory and long-term poverty, a crucial distinction in designing and evaluating poverty reduction strategies.

Okrasa analyzes household welfare trajectories during the period 1993–96, to identify the long-term poor and to determine how relevant household asset endowments are as determinants of household poverty and vulnerability over time.

He concludes that the chronically poor constitute a distinct and separate segment of the population, with low turnover. Among specific observations about factors that affect Poland's long-term poverty:

- Variables in human capital significantly affected the pattern of repeated poverty and vulnerability. Larger households tended to experience poverty and vulnerability, mostly because they contained more children or other dependents. Households with elderly members and those headed by older people, by women rather than men, and by educated people of either

gender were least likely to be poor. Poverty was unaffected by the presence of a disabled person in the household.

- Households with liquid assets or durables, or with access to financial resources, were less likely to be poor and vulnerable. Households appeared to take advantage of credit and loans to maintain their current level of consumption rather than to augment their stock of assets.

- Households that were part of kinship networks were less at risk of falling into chronic poverty or vulnerability.

- Households headed by pensioners were least in danger of impoverishment. Those most in danger were farm households (including "mixed" households headed by workers with an agricultural holding) and households heavily dependent on social welfare.

- Households of employees were better off than self-employed households when income-based measures of poverty were used but not when consumption-based measures were used. Neither group was significantly vulnerable.

This paper — a product of Poverty and Human Resources, Development Research Group — is part of a larger effort in the group to study the dynamics of poverty and the effectiveness of the safety net. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sheila Fallon, room MC3-558, telephone 202-473-8009, fax 202-522-1153, Internet address sfallon@worldbank.org. Policy Research Working Papers are also posted on the Web at <http://wbi0018.worldbank.org/research/workpapers.nsf/policyresearch?openform>. The author may be contacted at wokrassa@worldbank.org. November 1999. (52 pages)

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WHO AVOIDS AND WHO ESCAPES FROM POVERTY DURING THE TRANSITION: EVIDENCE FROM POLISH PANEL 1993-96

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Abstract

This paper uses four-year panel data from Poland's Household Budget Survey to explore the distinction between transitory and long-term poverty, a crucial distinction that ought to be made when designing and evaluating an effective poverty reduction strategy. It analyzes the household welfare trajectories during 1993-96 in order to identify the long-term poor and how relevant are the household human and nonhuman asset endowments in determining the household's poverty and vulnerability status over time. The paper concludes that there is a tendency towards long-term poverty in Poland, with indication on human capital, fertility level, unemployment incidence among the household members, and on urban-rural distinction as major factors that account for this tendency.

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WHO AVOIDS AND WHO ESCAPES FROM POVERTY DURING THE TRANSITION: EVIDENCE FROM POLISH PANEL 1993-96

Introduction

The transition to a market economy in Poland has initially caused a severe decline in the overall well being of the population. A good deal of information is available about how the stabilization policies and systemic reform measures affected different segments of society from 1989 to 1992, including a World Bank study (World Bank, 1995). This paper examines how the growth that Poland experienced during the subsequent period, from 1993 to 1996, affected both the population as a whole and, particularly, those low-income families that appeared to have been left behind.

In order to design effective strategies to combat poverty, policymakers need to know precisely *who* have and have not benefited from the improvement in the economy. They also need to know *why* the reform program that laid the groundwork for economic recovery has resulted in persistent misery for those who stayed in long-term poverty, while most households have suffered only temporary hardship. Why are certain households able to cushion themselves against idiosyncratic shocks to their income, while others are forced to reduce their current consumption for a longer period of time? In particular, who are these families and individuals who remain in poverty year after year -- those who were "missed in transition"?

The reform policies aimed at turning Poland's command economy into a market economy had embraced several measures that affected people's living conditions. Particularly harmful were the lifting of price controls, the imposition of fiscal discipline, and the cutting of huge subsidies on the prices of basic commodities (from about 33 percent of the recurrent budget in 1989 to just over 5 percent by 1993). At the same time, the Polish economy had lost about one-fifth of its national income, and its key social indicators had deteriorated -- with poverty and unemployment becoming the most detrimental new phenomena.¹

However, between 1993 and 1996, the average real growth rate had rebounded to around 6 percent annually, even (by 1996), exceeding the pre-transition level of cumulative growth by 5 percent. This high growth rate was paralleled by a rise in household income, which reached \$3,230 GNP per

¹ During the recession, unemployment jumped from being unreported (as it was practically non-existent --although) to about 17 percent in 1993, and poverty rose significantly to around 15 percent in each year from 1990 to 1994, according to the World Bank (1995). The poverty line was defined in that study as being equivalent to the "minimum pension." These poverty figures double when the poverty line was defined as either the "social minimum" or "low income" (as it traditionally had been in Poland during the 1980s), reaching 34 percent or 33 percent in 1992 respectively (Szulc, 1993). According to some preliminary estimates from the Central Statistical Office in Poland, the fraction of households (excluding self-employed households, which were not in the Household Budget Survey sample at that time) that fell below the "social minimum" in 1992 was as high as 39 percent (GUS, 1993). Recent estimates based on revised information (World Bank -- WDR, 1999) look much more realistic. They indicate that 23.8 percent of the population lived below the poverty line in 1993. There was a somewhat less dramatic increase in income inequality. The Gini coefficient rose from about 24 to about 25 in 1989 and oscillated between 24 and 27 from 1990 to 1992 (OECD, 1997 and WDR, 1999). Alternative estimates of the Gini coefficients for the 1985 to 1992 period were recently presented by Keane and Prasad (1999) as follows: 29 (1988), 29 (1989), 28 (1990), 27 (1991), and 26 (1992). According to Gorecki (1994), there was also no increase in inequality in 1991 after some drop in it observed in 1990.

capita in 1996 (or \$6,000 in PPP-international dollars)² Private consumption per capita increased accordingly at a rate of 4.6 percent annually, with food consumption per capita having already reaching the pre-transition level by 1993.³

While still modest by the standard of European Union countries, this upswing in the Polish economy was crucial in determining the economic welfare of the population. While the recovery at the macroeconomic level appears to have benefited many people, it did not automatically lead to a general improvement in welfare for all Polish households. For some families and individuals, the economic hardships of the transition have proven to be long lasting and, perhaps, irrevocable.

It appears that those with jobs or who receive a pension probably benefited most from the economic upturn because inflation generally declined (albeit from very high rates)⁴ and real incomes from all major sources (wages and salaries, pensions, and farm and non-farm self-employment income) increased. Thus, it is likely that the unemployed, those living on unproductive agricultural holdings, and those not in the labor force (mainly children, the disabled, and other dependents) continued to live in the "sphere of indigence" to quote the euphemism for poverty used by the previous regime (which did not officially admit that poor people existed in a socialist economy).

Most existing studies⁵ suggest that the pro-market reforms have not only widened income disparities in the population but also substantially changed the relative economic positions of different groups and segments of society.⁶ However, because they were limited to using *cross-sectional data*, these studies did not explore the year-to-year changes in households' relative positions on the welfare scale. In consequence, little is known about trends in poverty mobility and about households' transitions in and out of poverty in Poland. And even less is known about the performance of existing social policies in terms of how effective they have been in reducing long-term poverty.

To study either of these issues, and to trace changes in the relative economic positions of households over time, data for more than one period of time are required. In particular, the availability of panel data would make it possible to find out why some families and individuals follow one welfare

² See the World Bank Atlas (1998) and the WDR (1998). For a comprehensive review of the macroeconomic indicators and trends in the Polish economy for the same period as covered by this study, see OECD (1998) and Kolodko and Nuti (1997). A theoretical explanation of the U-shaped evolution of total output during 1989-92 can be found in Blanchard (1997) while a discussion of the transition from a political economy standpoint might be found in Balcerowicz (1997) and Gomulka (1998).

³ According to the household budget survey data, the year-to-year growth of consumption per capita was slightly negative during 1993-95; the 1993 level was exceeded only in 1996, but it still remained below the 1989 level (by about 19 percent), while income growth was consistently positive and was in 1996 by 3.5 percent smaller than in 1989 – own counts, see also GUS (Trzcinska, 1998) and Nowak, Ryc, Zyzynski (1998).

⁴ The annual average inflation rate was 32.4 during 1990-96. Its decline was very uneven – it dropped from 586 in 1990 to 70 in 1991 and continued to decline to 35 in 1993 and to 19.9 in 1996 (Sources as in footnote 2).

⁵ See Atkinson and Micklewright (1992), Milanovic (1998), OECD (1998), Okrasa (1994), Szulc (1996), Torrey et al (1998), and World Bank (1995).

⁶ For example, households associated with agriculture lost out, while pensioners gained during the first phase of the transition (Szulc, 1996; Okrasa, 1994; and Milanovic, 1998). Also, younger, better-educated workers gained more than older, more-experienced workers (J. Rutkowski, 1996 and Keane and Prased, 1999).

trajectory while others follow a different one. These fundamental questions need to be answered as Poland (and other countries in Eastern Europe) begins to taste the first successes of its market reforms.⁷

However, the official poverty statistics in Poland (as in other countries in the region) make no distinction between those who are temporarily poor and those who constitute the chronically poor.⁸ Indeed, the phenomenon of poverty has only been officially recognized in Poland since 1989, and there is still no official poverty line.⁹ Consequently, the Polish government has as yet made no deliberate attempt to target the long-term poor.¹⁰ Thus, it is vital that the chronically poor be identified as such, as these people present a distinct set of problems for social policy (Ravallion, 1996; Jalan and Ravallion, 1998; and Glewwe and Hill, 1995). Unless policymakers have a clear understanding of the heterogeneous pattern of long-term poverty, they may not be able to design effective and cost-efficient strategies to change the welfare trajectories of specific, identifiable vulnerable groups.

The analysis in this paper is based on the construction of a four-year panel data set (from 1993 to 1996) from the Polish Household Budget Survey (HBS) conducted annually by Central Statistical Office. The data were used to examine the key policy issues discussed above -- changes in the relative economic positions of Polish households and the role of social policies in addressing long-term poverty during the period of economic recovery and growth. (A description of the data can be found in Appendix A).

The paper is composed of two parts. The first part examines those household characteristics that are associated with different patterns of welfare over time -- also called trajectories of income or consumption. The second part focuses on how some Polish families managed to survive economically during this turbulent economic period. [In a separate paper, forthcoming, a complementary question is asked about whether chronically poor families were helped, and to what extent, in their struggle to move out of poverty by receiving government benefits¹¹.]

Two major intentions underlay these discussions. First, people in long-term poverty tend to be socially excluded and, thus, eventually become an "underclass" (Duncan et al, 1992). This raises the question of whether the behavioral indicators of belonging to this class (such as the receipt of welfare benefits as a main source of income, low educational achievements, and, in some cases, female headship) differ from those that are associated with the so-called "deserving poor" (such as being in a family that

⁷ This type of question embraces both the *dynamics* and the *processes* involved in the relationship between "social exclusion" and "poverty" as defined by Atkinson and Hills (1998).

⁸ The fact that the UNDP poverty index for industrial countries (HPI-2) uses long-term unemployment as the only indicator of "social exclusion" illustrates the difficulty of getting national statistical offices to collect data that acknowledges the temporal heterogeneity of the poor.

⁹ In 1996 (September) was introduced so-called "intervention threshold" (250 zlotys in current value) but as a guide for determining eligibility for social assistance, without government's commitment to fill the gap up if a household's income per person is below this level; therefore, it is not the poverty line institution in the sense discussed by Atkinson (1993).

¹⁰ However, some initiatives along the lines of welfare-to-work programs (including support for unemployed people who start their own businesses) have at least implicitly taken account of the long-term economic outlook for poor families.

¹¹ The forthcoming (complementary) paper, "Poverty Dynamics and the Effectiveness of the Safety Net in Poland: An Evaluation using Panel Data 1993-96" analyzes how the incidence of household endowments and the allocation of social benefits affect families' transition in and out of poverty.

works in agriculture or in jobs with low wages or in families with many dependents).¹² The second object of special interest (that is addressed in the complementary paper forthcoming) relates to the piecemeal nature of the existing social welfare system in Poland.

¹² For instance, about 60 percent of the poor in Poland in 1993 were categorized as the “working poor” (World Bank, 1995).

Part I: Household Welfare Trajectories during 1993 - 96

This section of the paper discusses the welfare trajectories of the households in the survey sample during the period 1993-96. Two key aspects of household welfare are predominant in this discussion – poverty status over time, and change in it (which is also called poverty mobility –in other words, the transitions that households make into and out of poverty), and economic vulnerability (in other words, the household's propensity to become or remain poor due to the effects of both household-specific and economic factors).

Poverty Mobility

Poverty mobility is one of the most important facets of economic mobility from a social policy standpoint. If data indicate that a household has upward income mobility, then this is likely to mean that the economic opportunities available to them have increased. Therefore, the trend in year-to-year economic mobility can be taken as an approximate indicator of whether the reform program helped to increase the economic opportunities that were available during the growth period (1993-96) compared to the those that were available during the recession (1989-92).

During 1993-96, overall income mobility in Poland was high. In other words, the percentage of households that changed their original positions (defined in terms of quintiles or deciles of the population by household disposable income per capita) was substantial. This is illustrated by the income transition matrices – using quintile-by-quintile tables – that are summarized in Table 1 below.¹³ The table contains the percentages of households whose economic situation deteriorated, stayed the same, or improved (categorized as “drop-outs,” “stayers,” and “movers-up”).¹⁴

When deciles rather than quintiles were used, 72 percent of households changed their positions between 1993 and 1994 (either deteriorated or improved), while 70 percent did so both in 1994-95 and in 1995-96. Thus, mobility was high because slightly less than one-third of the population remained in the same economic situation as before (compared to 100 percent with incomplete immobility). However, there is still a clear state-dependency as the random model would predict only 10 percent (Jarvis and Jenkins, 1998). In addition, the fact that the most of the changes took place within the two neighboring diagonals (as can also be seen in the inter-quintile percentages in Table 1) suggests that, while there is considerable income mobility, most of it is short-range.¹⁵ This means that the poorest families are not only more likely than others to remain in their disadvantageous position (as is shown by the bottom fifth in Table 1), but they also face a bigger risk of dropping back into the lowest group after escaping from it.

¹³ The matrices (not included here but are available on request from the author) are built in terms of decile-by-decile groups of household disposable income per capita, with entries $p_{ij}(t)$, with the conditional probability of occupying state j in time t given that state i was occupied in the previous period.

¹⁴ The percentages can be interpreted as the maximum likelihood estimators of $p_{ij}(t)$, the fractions of households who occupied state i and now occupy state j , $\hat{p}_{ij}(t) = n_{ij}(t) / \sum_j n_{ij}(t)$. The 'a' and 'c' cases are aggregated by summing over $j < i$ and over $j > i$ respectively.

¹⁵ This corresponds with results of Jarvis and Jenkins for Great Britain (1997) who reported somewhat lower overall mobility (for example, 36 percent remaining on the leading diagonal).

The four years of data that are available were not enough to test whether these changes in the distribution of income result from changes in the underlying characteristics of the population during that period or from changes in the functional relationship between income and the underlying characteristics of the population. However, the literature on the subject suggests that differences in income distribution over time typically involve human capital variables such as education, labor force participation, and age (Diamond et al, 1990).

Table 1: Transition between Income Groups from Year to Year during 1993-96

Quintiles of income	Households whose economic situations deteriorated				Households whose economic situations remained the same				Households whose economic situations improved			
	1993-94	1994-95	1995-96	1993-96	1993-94	1994-95	1995-96	1993-96	1993-94	1994-95	1995-96	1993-96
Per capita	1	2	3	4	5	6	7	8	9	10	11	12
Bottom	-	-	-	-	60	61	62	56	40	39	38	44
2 nd	24	23	23	24	38	39	41	32	38	38	35	45
3 rd	33	32	32	35	34	37	38	33	33	41	40	32
4 th	39	38	37	41	38	40	40	35	23	22	23	24
Top	40	38	37	46	60	62	63	54	-	-	-	-

Certain shifts in functional relationships, as reflected in the earnings function, showed that the role of human capital in determining wages became more important during the transition than it was during the pre-reform period (World Bank, 1995 and Rutkowski, 1996).¹⁶ The systematic growth in returns to education continued during 1993 to 1996 (Newell and Socha, 1998). However, unlike in other countries in the region such as Estonia (Noorkoiv, Orazem, Puur, and Vodopivec, 1998), this growth was accompanied by a decline in the returns to work experience (Keane and Prasad, 1999).

At the household level, life events such as marital instability, household splits, or becoming widowed or orphaned are instantaneous causes of changes in a household's economic position, including its likelihood of being poor. For example, the significance of the death of the breadwinner for causing a household's economic situation to deteriorate was demonstrated by Ainsworth and Over, (1996), while

¹⁶ For instance, returns to education (per school year) rose from 6.4 percent before the transition to 7.5 in 1992, close to the level in the Federal Republic of Germany in the late 1980s (see World Bank, 1995).

the effect of marital disruption on the length of time that a household spends in poverty was analyzed by Duncan et al, (1992). However, life events are not directly analyzed in this paper.¹⁷

Poverty mobility is, to a large extent, affected by the same factors as determine poverty in countries in transition, namely, changes in income levels and in income distribution (Milanovic, 1998a; Szulc, 1996; and World Bank, 1995). Focus on income levels involves analyzing some aspects of the labor market -- such as changes in wages and in "earning capacity" which are of primary interest in classic models of poverty causation (Garfinkel and Haveman, 1977) -- and of the business cycle. It seems likely that there was higher poverty mobility and, thus, a lower tendency towards long-term poverty during the 1993-96 period than during the preceding recession period. This is because the economic opportunities available to households depended not only on the fact that there had been uninterrupted economic growth since 1993, disinflation and rapid export growth since 1994,¹⁸ and declining unemployment after 1993 (despite its continued high level) but also on a wide range of changes in social policies.

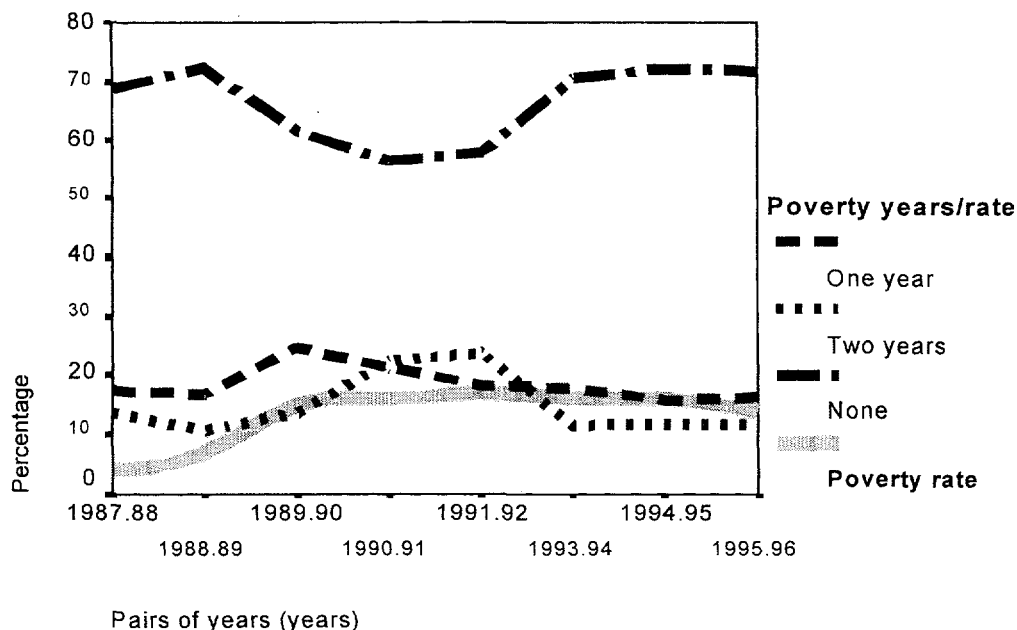
Looking only at repeated poverty, some observations can be made about inequality and changes in the relationship between major sources of household income in the decade from 1987 to 1996. Despite the fact that there were some differences in the definitions of poverty used in the 1993-1996 data and in the 1987-92 data, it is possible to calculate for each two-year period the fraction of people who were in poverty throughout that time.

¹⁷ There are two reasons for this: (i) because this paper focuses on policy-relevant characteristics rather than on events occurring incidentally in the family life, which seem to be more important for falling into poverty rather than for remaining in it; and (ii) because not enough data were available for the survey on why the composition of a given household may have changed between different rounds of the survey.

¹⁸ Also the direction of the exports has changed diametrically. For instance, while the value of machinery and equipment exports to the former Soviet Union fell by 78 percent during 1988-94, the value of these exports to the OECD increased by 355 percent (Kaminski, Wang, and Winters, 1996).

Figure 1. Two-year Poverty Mobility and

Poverty Rate, 1987 - 1996



Source: Own calculations and World Bank (1995, for poverty rate in 1988-92).

These fractions are presented in Figure 1, along with the fraction of people who were poor for one year and the fraction of people who, during each two-year period, remained out of poverty.¹⁹

In order to compare the trends in poverty mobility with that in poverty incidence during the same period (1987-96), a line representing the poverty rate is also inserted in Figure 1. [The poverty rate was estimated in the same way as in the World Bank's poverty assessment study (1995): a household was classified as poor if its consumption expenditure per equivalent adult was below the level of the minimum pension.] Interestingly enough, from the beginning of the transition, the trend in the fraction of poor in the population presents similar shape as the trend in repeated poverty, signaling a tendency to comovement of overall poverty and chronic poverty indicators. In other words, an increase (decrease) in poverty incidence indicates a tendency to relatively higher increase (decline) in the fraction of persistently poor than transitory poor. Such a policy-relevant effect was particularly apparent during 1990 to 1992

¹⁹ In each case, poverty was calculated on the basis of household disposable income in real terms per equivalent adult (using OECD coefficients -- 1.0 for the first adult, 0.7 for other adults, and 0.5 for children under the age of 14). However, while the relative poverty line (50 percent of mean income) was used for the 1993-96 data, for the previous period, the so-called "low-income" threshold had been used, which, on average, counted during that time for very similar portion of the disposable income as half-mean income did. This threshold was introduced in 1981 as equal to the 1980 "social minimum" and was updated during the next few years -- see Kordos and Ochocki, 1993. Therefore, what is compared here are trends during 1987-92 and 1993-96 rather than the two-year poverty incidence figures for the two periods.

when poverty rose from about 15 percent to nearly 17 percent being paralleled by almost double growth of the fraction of repeatedly poor, along with a decline in the fraction of temporarily poor.

This exercise demonstrates that trends in repeated poverty during the growth period (1993-96) was similar to that during the pre-transition era: The fraction of households experiencing two-year poverty oscillated around 10 percent after it had worsened significantly during the recession itself (about every fifth household experienced two-year poverty during 1989-92, and this fraction was even higher than the fraction of those who experienced one-time poverty).

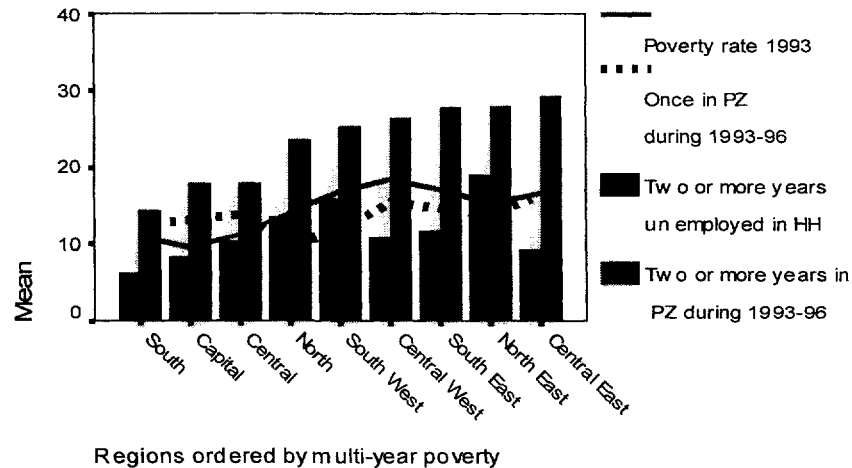
There was also a sharp contrast in poverty turnover between the recession and the growth periods: the percentage of those who remained in poverty for two consecutive years raised from about 45 percent in 1988-89 to 72 percent in 1991-92 (Okrasa, 1994), but this fraction stabilized at about 60-62 percent during 1993-96. The higher poverty mobility during 1993-96 (and, by the same token, a tendency to a lower poverty persistency) reflects the positive impact that renewed growth was having on low-income households who, on average, tend to stay shorter in a continued poverty than during recession, as well as on those that were better off. However, the numbers of “stayers” in the state of poverty are still high when compared to those in advanced OECD economies.²⁰

Repeated poverty seems to be closely associated with long term unemployment both at the aggregate and at the regional level, as well as with the poverty rate in the starting year 1993 – as presented in Figure 2. Indeed, the regional distribution of long term poverty follows, in most cases, the regional distribution of long term unemployment. Important exceptions are Central West and SouthEast regions²¹

²⁰ The analogous figures for developed countries are about the pre-transition level for Poland -- for instance, in Germany, the fraction of those who remained in poverty for two consecutive years was 42 percent and, in the US and Canada, it was 46 percent (Duncan et al, 1993).

²¹ The Central West and South East regions are embracing the former Poznan and Cracow voievodships, respectively. The rate of unemployment in these voievodships, was among the lowest during the period under analysis (7.7 and 9 percent in 1993, respectively and slightly above 6 percent in both voievodships in 1996 – for instance, Kwiatkowski and Kubiak (1998) and Malarska (1998).

Figure 2. One- and Two-year Poverty and
Unemployment Incidence during 1993-96
and Poverty Rate in 1993, by Region



Source: Own calculations and World Bank (1995, for poverty rate in 1993).

The stabilization of the level of two-year poverty incidence during 1993-96 corresponds with the astonishingly monotonous-looking picture presented by major income sources and expenditure distributions, particularly given the major changes occurring in the economy and in policies during that period -- such as privatization and the development of financial sector and retail credit markets (Belka 1994).²² In practice, all measures of inequality, which had increased substantially during the previous period (1989-92), have remained basically unchanged at that level as shown in Table 2 (all measures are in real terms, and estimated on the basis of full cross-sectional samples).²³

²² In addition to changes in the financial sector that adapted it to developments in the retail credit market and in the interest rate, there was also a large increase in the private sector's share in the economy from about 48 in 1993 to 70 percent in 1996 (Kolodko and Nuti, 1997). An increase in aggregate savings has also been observed since 1995 when the savings rate surpassed the 1991 level, reaching 18.3 percent of the GDP (see Denizer and Wolf, 1998). It was paralleled by household savings rate and by a sudden increase in credits and loans during the last couple of years of the studied period. However, according to recent evidence from Deaton and Paxson (1998), the positive relationship between growth and saving has not necessarily been accompanied by a similar trend at the micro-level.

²³ Very similar are the Gini coefficients reported in the OECD Survey for household equalized income (using the same OECD-equivalence scale): 29 in 1993; 30 in 1994; 29 in 1995; and 30 in 1996 (OECD, 1997).

Table 2: Gini Coefficients for Selected Measures, 1993-96

	1993	1994	1995	1996
- Household disposable income <i>per capita</i>	31.5	32.1	31.7	32.4
- - wages and salaries *	n.a.	27.6	27.5	27.4
- - pensions *	25.1	23.7	23.2	23.8
- Household consumption expenditure <i>per capita</i>	31.4	32.0	31.5	32.8
- Household disposable income <i>OECD-equivalent</i>	29.6	30.6	30.0	30.9
- Household consumption <i>OECD-equivalent</i>	28.6	29.3	28.7	30.1

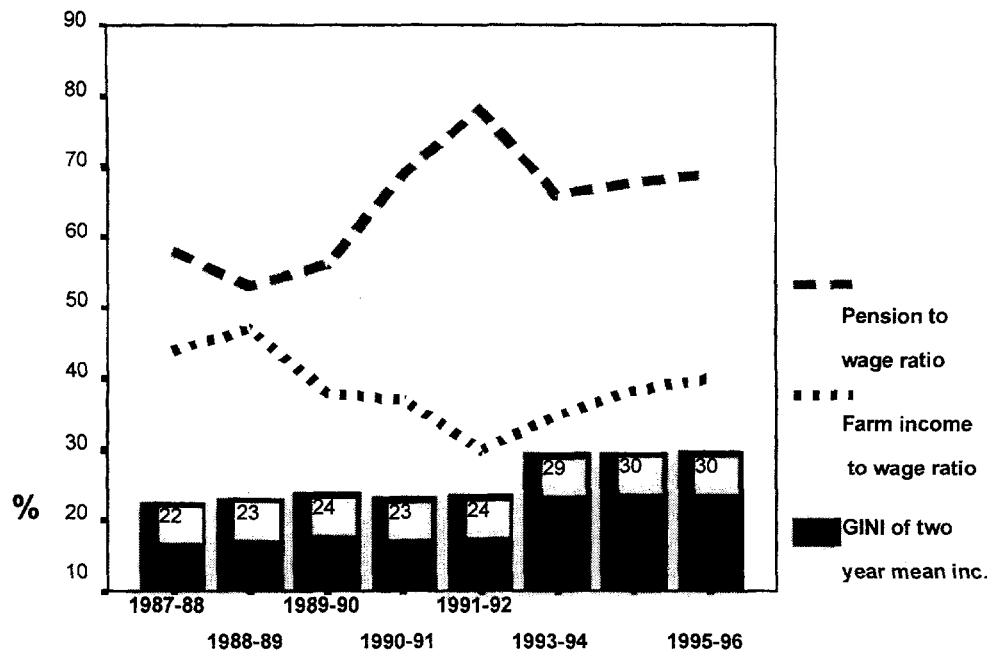
Source: Own calculations (cross-sectional data). *) Recipients only

As might have been expected, the small increase in overall income inequality during this four-year period was accompanied by small changes in the distribution of the two major components of household disposable income -- earnings and social transfers.²⁴ The Lorenz curve for these years, both for household income and consumption (per capita and in real terms), behaved "regularly," showing no cross-cutting and very close lines for the 1993-96 distributions (the respective figures are available on request from the author). However, the fact that inequality remained stable during this period does not imply that the relations between the major sources of income also remained unchanged. At first glance, when the shares of income from major sources are compared, they look practically the same for each year 1993-96 (see Figure A-1 in Appendix A), which suggests that there were no structural changes in the composition of the income sources of the households in the panel).²⁵ But the relationships among these different income sources did change, as can be seen in Figure 3.

²⁴ It should be noted that wage inequality changed markedly during the recession phase of the transition, and in 1993-94. For instance, the decile ratio rose from 2.8 in 1991 to nearly 3.5 in 1994 (the biggest jump was in 1993-94), and it stabilized afterward around the level of the OECD average (OECD, 1998).

²⁵ Wages and salaries account for 39 percent of household disposable income in each year; self-employment farm and non-farm for 14 percent; and only a small change was observed in pensions between 1993 and 1996, from 41 to 43 percent at the expense of "other" income.

Figure 3: Ratio of Income from Pensions and Agriculture to Wages and Salaries, and the Gini Coefficient of Household Income (all measures are for two-year averages)



Source: Own calculations

Figure 3 depicts the ratios between two-year average income measures coupled by Gini coefficients of two-year household disposable income. Figure 3 shows that, during the 1993-96 period, the ratios of pensions to wages and of farm income to wages changed much less than during the previous five years. By and large, for most of the decade, when pensioners gained in relation to workers (as happened in 1990-92), farmers lost, and *vice-versa*.

The two-year average pension-to-wage ratio (which rose rapidly after the beginning of the transition and peaked in 1991-92 at 78 percent) decreased somewhat after 1993 when some adjustment factors were introduced. These factors included a reduction in the indexation rate of old-age retirement and disability pensions from 100 percent to 91 percent and an increase in the length of the base time for retirement pay. However, the replacement ratio remained high – much higher than average in OECD countries – even after the indexation system was changed back to a price-based system in 1996 (this point will be discussed later).²⁶ The deterioration in farm income relative to wages and salaries during the recession reflected not only several negative economic factors (such as price liberalization and low tariffs on imported food) but also the fact that farmers constituted one of the weakest of the “special-interest groups” during the first phase of the transition (Wnuk-Lipinski, 1992).

²⁶ Although wage-based indexation was continued until 1996, lengthening the base for calculation (for example, a selection of three consecutive years from the previous 12 years) has some reducing impact on the average pension (OECD, 1998).

When comparing the trend in two-year inequality with that in poverty mobility (Figure 1), the pattern that emerges confirms the coincidence of increases in inequality and repeated poverty but not in their levels. Although inequality was higher during 1993-96 than before the transition, the chronic poverty indicators for the two periods are very much alike. (However, some caution needs to be given about extending the comparison from trends to levels in light of the fact that the definition of poverty was not the same in these two periods).

Vulnerability

Vulnerability is a concept that is intrinsically dynamic and complex. In previous studies, it has usually been defined in an arbitrary way (as discussed, for instance, by Glewwe and Hall 1995). Ideally, it should reflect a household's propensity to fall into poverty due to the effects of both household-specific and economic factors. The undetermined nature of the relationship between income and consumption raises a doubt about how to represent vulnerability unequivocally in the empirical analysis. It was not clear whether it was more appropriate to use income or expenditure measures, so to use both seemed finally to be a reasonable compromise. According to these results, for a household to be considered "vulnerable," during the four years in question, there had to have been a systematic decline in either its income or its consumption (in terms of respective quintiles) or in just one of these measures if there had been no systematic increase in the other (although a sporadic flip-flop was acceptable). Altogether, about one-third (31 percent) of households was classified as vulnerable (compared with about one-quarter if only one measure had been used).²⁷

Welfare trajectories

The two general observations can be made about trends in overall mobility and repeated poverty during 1993-96 – there was high inter-decile mobility and a high probability of falling into repeated poverty (even though this probability was lower than during the recession period). Given these observations, it is worthwhile to examine the welfare trajectory followed by the sampled households during the entire four-year period.

The key difference between long-term and transient poverty can be attributed to the presence of state-dependency,²⁸ in other words, the conditional probability of being poor is higher for those who have already experienced poverty than for those who have not. Also, the dependency is typically not Markovian. This can be illustrated by the following fractions of households who stayed in poverty for one, two, or three consecutive years and for a further year.

²⁷ These two measures are highly consistent – more than four out of five units that experienced a decrease in one measure, say income, have simultaneously experienced a decline in the other (in consumption).

²⁸ Behind the statistical figures on state dependence are some causal-type relationships, such as between remaining in poverty and health status. Past poverty (which may have caused a deterioration of a person's health) may cause subsequent poverty by putting those economic opportunities that require sound health out of that person's reach (see Hill, 1992).

Fractions of those Remaining in poverty for	by income per capita	The lowest quintile by consumption equalized
2 nd year	60%	58%
3 rd year	72	68
4 th year	78	75

*OECD-equivalent scale

The increase (from less than two-thirds to three-quarters) in the probability of remaining in poverty from one year to the next is large enough to refute the contention that chronic poverty follows the Markovian property.²⁹

One point of departure for looking at poverty mobility during the entire four years in question is to compare actual and randomly generated distributions of the “number of years in the poverty zone” (a variable interchangeably called the “trajectory” or “welfare path”) as in Table 3.

In column 2 of Table 3 are the numbers of times during the four-year period that a household or person would be in the lowest fifth as predicted by the lottery model (in which no assumption is made about state-dependency) as discussed by Jarvis and Jenkins (1997). In columns 3 to 6, the fractions of households and people are distributed among five possible time events, which consist of being in the poverty zone for one, two, three, or four years during 1993-96 or remaining outside the poverty zone for the whole period.

The welfare trajectories defined in terms of the number of years spent by families or individuals in the poverty zone (during the period in question) do not follow the random mechanism.

²⁹ In addition, the transition probabilities are generally time-varying, and a simple first-order Markov process does not usually fit the income mobility data (Schluter, 1997). Although there is a good reason to believe that this is a non-Markovian dependency, it is convenient to assume that poverty mobility is a “without memory” type of process when contrasting repeated with one-off poverty.

Table 3: Comparing the Actual Frequencies of Households and Individuals being in the Lowest Quintile (the Poverty Zone) during 1993-96 with Random Frequencies Generated by the Lottery Model

Number of times (years) of being in the lowest fifth	Lottery model ¹	Households ²		Individuals ²	
	Percent	Number	Percentage	Number	Percentage
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
None	41.0	3,123	63.5	9,436	53.1
One year	41.0	666	13.5	2,760	15.5
Two years	15.0	450	9.1	2,071	11.7
Three years	2.5	354	7.2	1,715	9.7
Four years	0.2	326	6.6	1,773	10.0
Total	100.0	4,919	100.0	17,755	100.0
<i>Percentage of low income observations (in the lowest fifth)</i>					
One year	51.0	37.1		33.2	
Two years	36.0	25.1		24.9	
Three years	9.6	19.7		20.6	
Four years	0.8	18.2		21.3	

Source: ¹ Jarvis and Jenkins (1997); ² Own calculations.

At a glance, it can be seen that the discrepancies between the survey data and the numbers generated at random confirm the distinctive nature of the long-term poverty experience. The fractions of households and individuals that fell into the poverty zone more than twice (during this period) or permanently are 14 and 19.7 percent respectively compared to only 2.7 percent in the random frequencies. Even after limiting the comparison only to those in the lowest fifth in any given year, the actual fraction of households, or individuals, that experienced chronic poverty is much higher than the fraction suggested by the lottery model. About two-thirds of these households (individuals) spent at least two years in the poverty zone compared to about a half in the lottery model, and four out of ten of them stayed in the poverty zone for three or four years, compared to only one-tenth in the lottery model.

Although it is difficult to do an effective cross-country comparison, Table 4 presents results for Hungary and Great Britain alongside those for Poland.³⁰ Since the studies for these two countries used different definitions of poverty, the results are not directly comparable with each other. However, the results for Hungary from the Hungarian Household Panel (HHS) (see Speder, 1998) and for Great Britain from the British Household Panel Survey data (BHPS) (see Jarvis and Jenkins, 1997) can both be compared with results from Poland's HBS because both types of measures were calculated for Poland.

These two measures were: (i) the number of times (years) spent in the lowest quintile by household disposable income per capita as in the BHPS and (ii) the number of years in poverty defined as 50 percent of the mean household disposable income per equivalent adult, as used in the HHS.

Table 4: Comparing Frequencies of Individuals by the Number of Years They Spend in the Poverty Zone in Great Britain, Poland, and Hungary

Number of times (years) of being in the poverty zone	Great Britain (BHPS 1991-94)	Poland (HBS 1993-96)		Hungary (HHS 1992-96)
	# of times in 1 st Quintile: income per capita	# of times in 1 st Quintile: equivalent income	50 percent of mean equivalent income	50 percent of mean equivalent income
1	2	3	4	5
None	64.0	54.9	67.4	73.9
One year	13.0	17.9	15.4	13.9
Two years	9.0	11.6	8.9	5.9
Three years	7.0	9.1	5.2	2.4
Four years	7.0	7.5	3.1	3.8
Total	100.0	100.0	100.0	100.0

Source: Great Britain: Jarvis and Jenkins, 1997 (quoted by Hills, 1998); Hungary: Speder, 1998; Poland: own calculations. Column 2 above should be compared with column 6 of Table 2.

³⁰ There are some comparative studies for leading OECD economies – for example, Schluter (1998) compares income dynamics in Germany, USA, and the UK but with differently organized data.

In Poland, a relatively larger part of the population experienced poverty for at least one year (during the four-year period) than in Hungary or Great Britain, and more poor people remained in prolonged poverty than in either of the other two countries.³¹

Looking just at the low-income observations in columns 2 and 3 of the table, the fraction of people in Poland who were never poor is about one-tenth lower than the equivalent fraction for Great Britain. Half of this difference can be attributed to those individuals who experienced one-off poverty during the transition, while the rest can be accounted for by those in repeated poverty lasting two to three years rather than by the permanent poor as both countries have the same fraction of these.

Looking now at the relative poverty line – the last two columns of the table – it becomes clear that Hungarians were less likely to be poor during the five years of the HHS study than Poles were during the four years of the Polish study. Almost three-quarters of the Hungarian population avoided poverty compared with slightly more than two-thirds of the Polish population (this fraction would be even smaller if those Poles who avoided poverty for four years but became poor in the fifth year were included). Also, Poles are more exposed to long-term poverty than Hungarians – 17.2 percent of the Polish population experienced repeated poverty during the four years compared with 12.1 percent of Hungarians during the five years of the study in Hungary (regardless of the sequencing of this event).

Thus, it seems that poverty mobility in Poland during 1993-96 was relatively low by western European (British) as well as by comparable eastern European (Hungarian) standards. The main implication of this is that the performance of the safety nets in Poland may have been less impressive than has so far been suggested by studies of “static” poverty (Grootaert and Braithwaite, 1998 and Keane and Prades, 1999). However, a concern for a persistent poverty has only recently been signaled by some policy analysts in Poland (for instance, Trzcinska, 1998,

It also points up the need for social policymakers to distinguish between two distinct categories of poor -- the temporary poor and the chronically poor,ⁱ particularly given the fact that most overall poverty is caused by the same factors as chronic poverty (as demonstrated by Jolan and Ravallion, 1998 for rural China). Accordingly, it is equally important to distinguish between those who are *vulnerable* to becoming poor and those who are *chronically vulnerable* -- whose long-term welfare tends to decline, exposing them constantly to becoming and remaining poor.

An approximate way to make the above distinction *ex ante* might be to look at the original positions of families and individuals, as in Figure A-2 in Appendix A. In this figure, it can be seen that practically none of the original welfare groups, even the top quintile, is immune to falling into poverty. One-off poverty or, to a lesser extent, two-year poverty was experienced by people from each group. However, the risk of experiencing poverty diminished sharply as the level of affluence rose.ⁱⁱ

³¹ This is in accordance with the somewhat higher incidence of “static” poverty in Poland than in Hungary that was revealed when purchasing power parities were used in the comparison (Szulc, 1996). However, according to the World Bank’s 1999 World Development Report, in 1993, poverty was estimated to be slightly higher in Hungary (25.3 percent) than in Poland (23.8 percent) (World Bank, 1999).

Who are the long-term poor?

Which people or households experience which particular patterns of poverty over time? Policymakers are usually most interested in studying the poor in two different ways -- one focused on their demographic characteristics and the other on their main sources of maintenance.

Demographic Characteristics. Children, adult females, adult males, and the elderly (over 65 years old) are not proportionally represented within the particular categories of the welfare trajectory ("number of years in poverty"). According to information presented in Figures 4a and 4b, which complement each other in this respect, the biggest differences are between the two extreme age groups (below 18 years old and over 65 years old).

From these figures, it can be seen that long-term poverty is a generation-skewed phenomenon with children being over-represented among those "missed in transition." The distributions of the major demographic groups over the number of years in relative poverty are significantly diverse. The most striking is the difference between the disproportionately high fraction (80 percent) of elderly people concentrated in the "never poor" category and the much smaller fraction of children (57 percent) in that category and who, by contrast, predominate in each of the remaining categories.³²

According to Figure 4b, nearly every second child experienced poverty for at least one year during the period being analyzed. This fraction ranged from 43 percent (when the 50 percent mean of equivalent income was used as the poverty threshold) to 47 percent (when the first quintile cut-off was used). These figures contrast with those for all other groups and especially with those for senior citizens. Even more striking is the fact that every second permanently poor person was a child, as can be seen in Figure 4b.

³² A similarly small proportion of elderly people among the poor was found in the Hungarian panel data (Speder, 1998).

Figure 4a: Major Demographic Groups (Children, Adults, and the Elderly) by Years in Poverty

(relative poverty, by equivalent income)

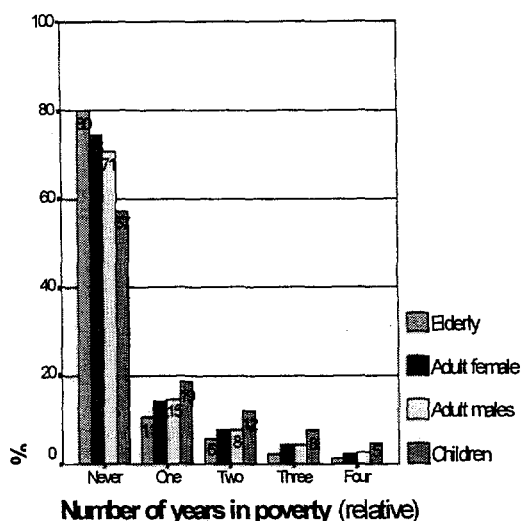
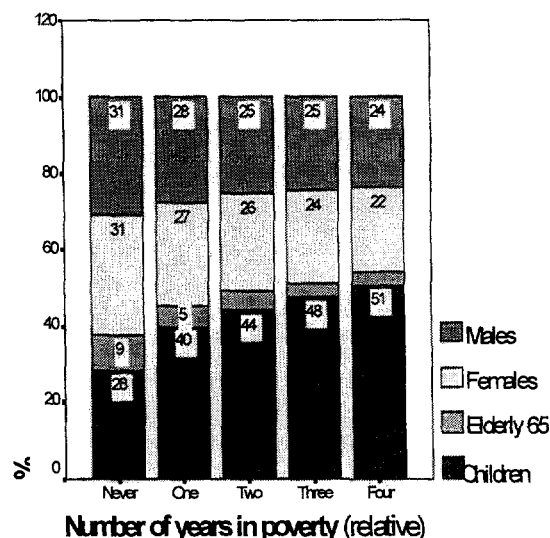


Figure 4b. Composition of Years-in-poverty Categories by Major Demographic Groups

(relative poverty, by equivalent income)



The demographic composition of the years-in-poverty groups shows that the fraction of children grows along with the number of years in poverty, while the fractions of all other groups decline, especially the fractions of the elderly and of females. Since the major demographic groups are not proportionally distributed among the major socioeconomic groups, these differences can, to a large degree, be expected to influence the variation observed among the major socioeconomic groups³³ -- not only in terms of income or expenditure but in terms of other aspects of welfare as well.³⁴

Socioeconomic Characteristics. While demographic distinctions are made at the level of the individual, focusing on the main source of maintenance means taking the household as the unit of analysis. Also, the comparisons among groups of households are more sensitive than comparisons among individuals to whether welfare is measured in terms of income or consumption. When trajectories by income and by expenditure are cross-tabulated, these two classifications are not identical, despite having very similar marginal distributions (detail may be obtained from the author or from the unit).³⁵

³³ The classification of households used here, called "socioeconomic groups," is the same one used in household statistics in Poland (based on the main source of income of the head of household, i.e., of the main breadwinner).

³⁴ For instance, according to a survey of housing conditions conducted in 1993, every fourth child in farm households and in households surviving on welfare had no place of their own to sleep, compared to only one out of 17 in the self-employed group (GUS, 1994).

³⁵ The most consistent (occupying the same position on both measures) are the opposite categories of "never in the lowest fifth" (83 percent) and "four times in the lowest fifth" (50 percent). In the other categories, the fractions of the "consistent" units vary but never get higher than one-third. Although the mobility issue can be, and is typically,

The income-consumption discrepancy varied considerably among different socioeconomic groups – from being practically insignificant among households consisting of employees (in terms of the proximity of the respective marginal distributions) to having significantly different margins for farmers' households.³⁶ This suggests that, even given that a substantial part of farm income comes to the household in-kind as it consumes its own produce, there may have been more underreporting of income in this group than in others (partly due to possible under-pricing of home-grown products).³⁷

Households associated with agriculture were in greater danger of falling into chronic poverty than households of employees or pensioners. According to Figure 5, which presents fractions of those who were in the poverty zone for a given number of years among each of the socioeconomic groups, farmers were the second poorest households under both measures after those living on social welfare. Only one-sixth of welfare recipients had never been in the poverty zone during this period under the income-based definition, compared to about one-quarter under the consumption-based definition (which is used in this figure).

Figure 5: Welfare Trajectories

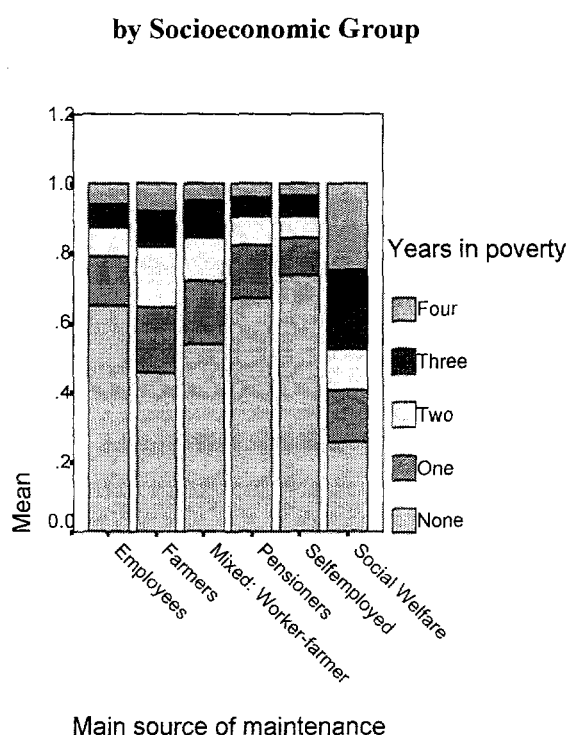
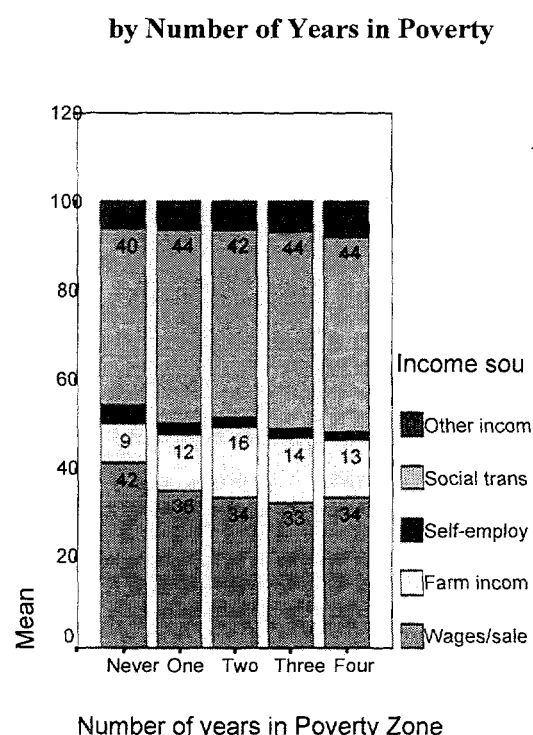


Figure 6: Income Composition of Households



handled on the basis of income, the consumption measures are preferred here whenever the focus is on poverty or welfare status itself (as discussed by Ravallion, 1996).

³⁶ In terms of an income-based trajectory, only slightly more than one-fourth of the farmer households (26 percent in 1993 to 28 percent in 1996) remained out of poverty during the whole four-year period. However, this fraction jumped dramatically (to 44 percent in 1993 and to 47 percent in 1996) when a consumption per capita measure was used instead.

Households consisting of employees and the self-employed were not much different from each other in terms of their welfare trajectories -- about every third household experienced some form of poverty in both groups. One reason for this is that they both benefited from the real increase in earned income during the whole period. The self-employed were, however, a very heterogeneous group. Most of the self-employed households in the survey represented small businesses. Some of them had started a family-based business as a part of welfare-to-work transition, receiving financial support from an active *labor market program* established to facilitate re-employment.³⁸ On the other hand, there was also a great similarity between these two groups (employees and the self-employed) in terms of their household composition. For example, the fraction of children was practically the same in both groups -- 38 percent in households of employees and 39 percent in households of self-employed people.

Three factors made pensioners relatively well-off and similar to the households of employees with respect to their poverty patterns³⁹, as seen in Figure 5: (i) the low effective age of retirement; (ii) the fact that they were allowed to earn up to 60 percent of their average wage without losing any of their pension benefits; and (iii) the high replacement ratio.⁴⁰

In addition, households headed by pensioners are not a demographically homogenous group. Although two-thirds of people over the age of 65 were concentrated in this group, the elderly accounted for only 28 percent of people who lived in households classified as "pensioners." Of the other members of these households, 60 percent were adults of productive age, while the rest (about 12 percent) were children. This indicates that there were a large number of multi-generation families in this group of households but with relatively low dependency ratios.

Children comprised exactly half of the all people living in households headed by persons living on social welfare (in which the fraction of elderly people was relatively the smallest). Only about one-quarter of these households had never experienced poverty during the four years being studied, while about the same fraction remained permanently poor. The fact that about every second household in this group spent at least three to four years in the poverty zone suggests that there is a persistent poverty trap in Poland and that the pocket of the most severe, long-lasting poverty is about half-filled by those living on social welfare, while most of the others come from low-income working households.

³⁷ This may explain some inconsistencies associated with the residual savings -- for example, that households with the biggest negative savings ratio may have a lower probability of remaining in poverty for another year than those with a ratio closer to zero.

³⁸ For a comparative review of labor policies at that time in the economies in transition, see M. Rutkowski (1996).

³⁹ There was also big similarity between poverty rate for these two groups during these years confirmed by also other studies -- for instance, according to Perek-Bialas and Topinska (1998), in 1996 the poverty rate was 8.8 percent and 8.6 percent for households of pensioners and employees, respectively.

⁴⁰ The high dependency ratio is not an effect of demographic structure -- which is generally considered as one of better in Europe from a labor force standpoint (see Witkowski 1999, also Holzer 1986),-- but rather a result of the fact that the age of entitlement has been interpreted rather liberally since the beginning of the transition. The average effective age of retirement is 55 years for women (formally 59 years) and 59 for men (formally 65), one of the lowest in Europe (see also "Security through Diversity," 1997).

The different welfare trajectories of various socioeconomic groups cannot automatically be projected on the income composition of the various years-in-poverty groups. The overall composition of the non-poor's income by sources, shown in Figure 6, was only slightly different from that of poor households, and it remained practically the same among all of the various categories of the poor.⁴¹ Wages accounted for about one-third of the disposable income of poor households, while transfers accounted for over 40 percent. The most striking features of the composition of the income of the sampled households were, first, the high share of transfer income in the disposable income of non-poor households and, second, the high share of income from work in the disposable income of poor households.

While on one hand this corresponds with the finding that those living mainly on pensions were relatively better off than other households, on the other hand, it suggests that chronic poverty also included the so-called "deserving poor" (working families with certain characteristics that are disadvantageous in a market environment -- as described in the US by Duncan, 1992). Therefore, the factors responsible for differences among households are more likely to determine chronic poverty rather than the factors responsible for the differences among socioeconomic groups. The traditional focus of social policymaking in Poland (as elsewhere in the region) has been on socioeconomic groups but, according to this finding, this has meant that policies have not taken sufficiently into consideration households' needs, most of which are determined independently from the fact of belonging to a particular socioeconomic group. This view is also supported by the within- and between-group decomposition of income inequality, both before and during the transition (Okrasa, 1987 and Keane and Prade, 1999).⁴² Another consequence of the fact that the income compositions of the different years-in-poverty groups are so similar is an expectation that the respective income concentration will converge -- as suggested by Milanovic (1998a) -- indicating that each income source contributes at a similar level to the overall inequality.⁴³

The surprisingly high share of labor income in the total income of households in all of the poor groups, including the permanently poor (which proves that chronic poverty is to a large extent experienced by the working poor) raises questions about their relative job premia. The data indicate that the earners in poor households were, in general, paid less than earners in other households and that the fraction of low-paid workers increased during the transition (Rutkowski, 1998).⁴⁴ This is confirmed by comparing the rates of return to education among the earners in poor households with the rate of return in the entire sample during the 1987 to 1992 period (World Bank, 1995 and Okrasa, 1994).⁴⁵ Presumably,

⁴¹ This contrasts with findings from the Hungarian two-year panel data, mostly due to reversed proportions of earnings and social benefits between those in two-year poverty and the "never poor." For instance, the share of income from social insurance benefits was 44 percent compared with 25 percent among the non-poor, while the shares of earnings were 17 percent and 52 percent respectively (Spéder, 1998)

⁴² For instance, Okrasa (1987) applied a decomposed Atkinson's index to 1986 data, and Keane and Prades (1999) used a decomposed mean log-deviation and coefficient of variation. In both cases, the between-group component of differentiation was shown to be negligible compared to the within-group differentiation.

⁴³ In particular, this corresponds with Milanovic's findings that pensions, wages, and non-wage private sector income had the same concentration coefficient in Poland in 1995 and, therefore, that people in different income brackets (whether rich or poor) should have similar shares of income from these sources (Milanovic, 1998).

⁴⁴ However, the increase in the fraction of low-paid workers (those receiving less than two-thirds of the median earnings) was rather modest, from 14 percent in 1987 to 17 percent in 1996 (Rutkowski, 1998).

⁴⁵ According to estimates of a Mincer-type earning equation for the 1987 to 1992 period, the return to schooling was, as follows:

the reason for this is because these low earners do not have the skills needed by the labor market as well as the effect of industry rents -- for example, low-paid public service jobs compared to better-paid jobs in mining, regardless of how much education the worker in question received (World Bank, 1995). Education will be discussed in Part II.

Long-term Poverty and Household Asset Endowments

Since poverty affects all aspects of the well-being of poor families and individuals, households can typically be expected to mobilize all of their available resources to avoid poverty or minimize the time spent in poverty. Therefore, this analysis needed to take into account not only the demographic and income characteristics discussed above but also the assets and endowments that the household has at its disposal including its human capital, its financial and physical assets, and some socioeconomic characteristics. A set of variables that represented these endowments was preliminary tested to find out how relevant they were in determining the household's poverty status over time.

Table A-2 in Appendix A presents the results (in terms of the values of t-statistics) of a one-way regression of the number of times (years) that a household experienced poverty (under alternative definitions of trajectory, either by income or by consumption) and of its vulnerability status on those variables that were considered as potential predictors in further analysis. In addition to the trajectory variables, two other variables that incorporated a rate of changes in income and consumption respectively were calculated in a parallel way – see columns 4 and 5.⁴⁶ Column 6 shows the results of regressing differences in the natural logarithm of real consumption per capita in 1993 and 1996, while the last column contains results for the indicator of vulnerability. (The variety of measures used is supposed to ensure that the resulting findings are robust.)

Here is a summary of the conclusions about the possible predictors of households' poverty and vulnerability status over time that are suggested by these preliminary results.

1. All human capital variables significantly affected the pattern of repeated poverty and the vulnerability of households. Larger households were more likely than others to experience poverty and vulnerability, mostly because they contained more children or other dependents. By contrast, households with elderly members, those headed by older people, and those headed by women rather than men and by educated people of either sex were least likely to

	1876	1989	1991	1992
-all earners in the sample ¹	5.0%	5.8%	7.4%	7.0%
-earners in poor households ²	3.0	2.4	3.4	2.6

^{1/} World Bank 1995 (Table 5.18). ^{2/} Okrasa 1994.

The return was not only considerably smaller among the earners in poor households but, in contrast to the overall tendency, it had also not increased during the transition compared to the pre-transition period.

⁴⁶ Both variables are defined in the same general way, as average year-to-year changes: $[(m_T - m_1)/(T-1)] / [(m_1 + \dots + m_T)/T]$ where m is a real household disposable income per capita or real household consumption per capita respectively, and T is time (year).

experience poverty and vulnerability. The presence of a disabled person in the household does not affect the household's poverty or vulnerability status.

2. Physical and financial assets also played an important role. If a household possessed liquid assets or durables, or had access to financial resources, this significantly influenced the household's poverty and vulnerability status over time, though not in the same way. Households with saving accounts were less vulnerable and more likely to remain outside the poverty zone than those without savings accounts. Also, those households that possessed more durables (especially such as electronic appliances and other easily tradable) could sell some of them if they slipped into poverty during hard times.
3. Many households that fell into repeated poverty during 1993-96 sold some of their durables, real estate, or other goods (according to the income measure of poverty -- the impact of this variable on vulnerability and other measures is not significant). These households were also observed to borrow money and to buy consumer items on credit. The incidence of such transactions correlates significantly with chronic poverty and vulnerability, suggesting that these households took advantage of credits and loans -- both formal and from private sources -- to a large extent to maintain their current level of consumption rather than to augment their stock of assets.
4. Most of the households in the sample were a part of a larger kinship network, which protected them against repeated poverty and vulnerability in a way similar to saving.⁴⁷ Fifty-six percent of these households received a gift from another household, and 64 percent donated gifts to members of other households at least once during the four years in question. As a result, the households that belonged to such networks faced significantly less danger of falling into chronic poverty or vulnerability
5. Of all the households in the sample, households headed by pensioners were in the least danger of being impoverished. Those in most danger of experiencing chronic poverty and vulnerability were farm households (including "mixed" households headed by workers who had an agricultural holding) and those whose main source of maintenance was social welfare.
6. The most numerous group -- households of employees -- and the smallest group -- self-employed households -- exhibited opposing patterns. Employee households were better off than self-employed households when income-based measures of poverty were used but not when consumption-based measures were used. Self-employed households were more likely than employee households to remain out of chronic poverty when consumption-based measures were used due perhaps to the greater volatility of non-wage income in the private sector than of wages and salaries. Neither group was significantly vulnerable.

⁴⁷ However, a tendency to overall decline of inter-household transfers was observed during the first period of the transition (as demonstrated by Cox, Jimenez and Okrasa, 1997, who analyzed these transfers for years 1987 and 1992).

Summary

Despite the fact that there was high economic mobility in Poland during 1993-96, there was considerable long-term poverty incidence during this time. The chronically poor constituted a distinct and separate segment of the population, as can be seen by the low turnover in the poor population. Children were over-represented among those who missed out on the benefits of the first phase of economic prosperity.

Chronic poverty and vulnerability was experienced by families with different labor status -- with both employed and unemployed head -- which, on the other hand, may be considered as important determinant of the long-run economic outlook.

Human capital has, according to a preliminary insight, a significant impact on a household's poverty and vulnerability status over time -- a decisively stronger impact than the household's non-human assets. This issue is analyzed in more detail in the next section, which assesses household's risk-coping abilities.

Part II: Household Economic Status over Time: Risk-managing Capabilities

The overall welfare of a household over time in any given economic environment can be thought of in a narrow sense as the product of how the household expends its resources and of what social policies are in place.⁴⁸ For policy interventions to be effective, they need to take into account not only the distinction between the poor and non-poor but also the distinction between those who are poor temporarily and those who are in chronic poverty. In order to be able to make these distinctions, policymakers need to know which households and individuals fall into which group by identifying them in terms of certain of their policy-relevant characteristics. The first set of these characteristics are the human capital variables that are typically used in poverty causation models as well as in standard Bank poverty assessments (especially for countries in transition). These include educational achievement and other characteristics of a household and its members such as their age, gender, locality, and family composition.

Most feasible (working) hypotheses of poverty suggest that certain types of households have characteristics that make them vulnerable and relatively more likely than others to fall into poverty or to stay in it for a longer period of time. These characteristics include being headed by a person with low educational achievement, by a woman, or by a single parent, having a preponderance of children under the age of 15, and being located in a rural area.

This section is devoted to assessing whether households with given characteristics have the capability to respond to their situation “adequately.” In the case of a poor household, this would mean turning its welfare trajectory around, while, for non-poor households, this would mean avoiding falling into the poverty zone in the first place. An analytical strategy was used that involved estimating the odds that a particular sub-group of families or individuals would experience poverty for a given number of years compared to a complementary (or to a “contrast”) sub-group (for instance, those with little education versus those with high levels of education, younger households versus households headed by older people, or rural households versus those in big cities). In other words, it was necessary to estimate how likely it was that a household with a given set of features would be in the lowest quintile of the household distribution by either income or consumption per adult equivalent.

Methodological Considerations

In selecting the appropriate method of analysis, two factors had to be taken into account. The first was that most of the characteristics listed above were not independent of one another with respect to the effects that each of them had on the household’s economic status over time. For instance, if a particular household was located in a rural area, it was likely to contain more children and to be headed by a person with a lower level of education than an urban household and so on.⁴⁹ The second factor was the categorical nature of the main (“dependent”) variable — the welfare trajectory.⁵⁰

⁴⁸ It is also supported by the finding that the way in which the distribution of social benefits contributes to the overall income inequality in population is, on general, more significant than the analogous effect of the share of social spending in GDP itself. For instance, this was shown in an East-West comparative study using the LIS (Luxembourg Income Study) data (Okrasa, 1992).

⁴⁹ For instance, the average urban households was composed of 3.1 persons (of which 0.96 were children under 18) versus 3.8 persons in rural households of which 1.27 were children; head's average number of school years was 11.3 in urban versus 9.7 in rural households; there is also a higher fraction of female headed households in urban areas

While the first consideration would suggest using multivariate models, the second consideration meant that it was not possible to use any model that assumed that the dependent variable is normally distributed with constant variance. Consequently, the two types of loglinear models were used – general and logit loglinear models – to determine the probability (or odds) that a household with a given set of policy-relevant characteristics had a particular welfare trajectory during the period being studied (1993-96). The models are described in Appendix B.

After these models were used to find out how human capital variables affected poverty patterns over time, two more interconnected questions arose. First, what was the risk that a household with a given set of features was chronically vulnerable to falling into poverty during the four-year period? In other words, which households were the most likely to be chronically vulnerable? Second, how did some primary factors of poverty -- such as the level of fertility or the employment of household members -- modify the way in which the household vulnerability status contributed to the number of years that a poor household remained in the poverty zone.

In order to make a better assessment of the dynamics of vulnerability and chronic poverty, chronic poverty was used as the dependent variable in a dichotomous version (with '1' being two or more years in poverty during the period under study) in a logistic model. The model contained interaction terms that were defined as products of vulnerability (an *exposure* variable) with other control variables. The number of children under the age of 15 and the number of years that the household had contained an unemployed person were chosen as the most serious *effect modifiers* in the relationship between the household's vulnerability and chronic poverty status (suggested both by the literature and by the previous section). These modifiers were included into the interaction terms with vulnerability.⁵¹ (The computational versions of the models will be presented later in the results section.)

It may be useful to mention that some of the characteristics included as variables in the models were *time-invariant* (such as the household's locality or the head's gender), whereas others were *quasi-invariant* because they moved over time without changing their margins (such as age or type of family). All of the other variables can be assumed to vary over time, although their fixed values (as in 1993) can be used to characterize the household's "initial situation."ⁱⁱⁱ The first group and some of the second – the locality of household, the head's gender, age, education, and marital status, and the type of family -- are

(37 percent) than in rural (26 percent). All of these differences were calculated for panel sample and were statistically significant (at least at $p = 0.01$).

⁵⁰ In contrast to the previous section, the numbers of years in the poverty zone are interpreted as categories that relate to a (categorical) variable rather than as values.

⁵¹ The adjusted odds ratio of a vulnerable household (versus a non-vulnerable household) being chronically poor with a given number of children and years of unemployment among its members was estimated by exponentiating a linear function of the regression coefficient involving the main effect of vulnerability and the interaction terms. For instance, the odds of being chronically poor (the odds ratio, OR) for a vulnerable household with an unemployed person present for one year and with three children was given by:

$$\text{OR (vulnerable vs nonvulnerable | unemployment, \# of children)} = e^{\beta_1 \text{ vulnerable} + \beta_2 \text{ \# of years_unemployed} + \beta_3 \text{ \# of children}}$$

where *betas* are estimated from the model 3 (Appendix B).

considered exogenous variables in the foregoing computations, and they will be of primary interest in the following sub-section.⁵²

Poverty and Vulnerability

In order to determine how vulnerability affects the household welfare status over time, the association between the two variables was estimated (refer to equation 1 in Appendix B) in the following (saturated) version:

$$(1a) \text{ Design: } \text{CONSTANT} + \text{WELFARE_PATH} + \text{VULNERABILITY} + \text{Covariate} \\ (\text{WELFARE_PATH} * \text{VULNERABILITY})$$

The estimated regression coefficient (B in the equation 1) for particular cells was 0.57 (with standard error 0.0250, and 0.52 to 0.62 asymptotic 95 percent confidence interval). This indicated, as expected, that chronically vulnerable households were indeed facing substantially higher risks of becoming chronically poor than non-vulnerable households. The odds of being in poverty for at least one year, rather than remaining outside the poverty zone during the whole period, were nearly twice as high ($e^{.57} = 1.8$) for vulnerable households than for non-vulnerable households. The same odds ratio holds between any two adjacent categories of the poverty pattern over time, what means that the above is true about being any $n+1$ rather than n years in poverty (including four versus three years in poverty).

In general, if a household is vulnerable, this means that it has a significantly greater propensity to become poor or to stay in poverty for a longer period of time than non-vulnerable households.

The Effect of Locality on Poverty Pattern over Time. During the period being studied, the incidence of rural poverty was higher than the incidence of urban poverty, especially in big cities according to various studies (including World Bank, 1995). Therefore, towns were classified in detail according to the number of their inhabitants in order to test the effects of household's locality on its welfare status over time.^{iv} Two specific questions needed to be answered. How much risk did rural households face of being in repeated poverty (as opposed to remaining outside of the poverty zone) during the four-year period as compared to urban households? And how did the risk vary among towns and villages of different sizes? The locality effect was estimated twice – first, to establish an association between locality and welfare status over time and then to examine the character of the relationship between the two variables. In both cases, the log linear model 1 (Appendix B) was used though adjusted for ordinal-by-ordinal variables with a covariate term. In addition, since a raw-effect model was needed in the second case, an interaction term for the between-locality covariate was included:

⁵² Although the last two variables could be either exogenous or endogenous in terms of determining poverty status and vulnerability, they are treated in this section as exogenous, not necessarily because they are time-invariant but because they describe important aspects of the household's "initial conditions."

(1b) Design: *CONSTANT + LOCALITY + TRAJECTORY + Covariate*

*[TRAJECTORY*LOCALITY]*

According to both models, the odds of following a given welfare trajectory – that is, of remaining outside the poverty zone or experiencing poverty for a given number of years – differed largely between the rural and urban population. The detailed results of these estimations are presented in Table B-1 in Appendix B.

The regression coefficient, 0.13, was high compared to its standard error (0.008), indicating that households in smaller places, particularly in villages, faced a bigger risk of experiencing multi-year poverty than did those in bigger towns. In general, the relative odds of being non-poor rather than poor were 1.13 for households in the smaller of the any two adjacent town sizes.⁵³ In consequence, households in the large cities were about six times more likely to remain outside of the poverty zone than to fall into poverty at all, while the analogous odds for the villagers were below four.⁵⁴

In general, rural households had an overall higher propensity to being in long-term poverty than urban households. It was also found that the bigger the town in which the household was located, the less likely it was that the household would experience repeated poverty.

This was checked using the raw-effects model, which ignores the order between the welfare trajectory categories. Indeed, the odds of being poor for several years decreased as the size of the town increased.⁵⁵ This may reflect either the fact that the economy of many small towns is predominantly agriculture-related or the fact that the “one-company town” syndrome (such as downsizing or closing the only enterprise in a town) has a significant negative effect on the welfare of the local population -- as discussed by Rama and Scott (1998) in the case of Kazakhstan. Validity of this observation is strengthened by the fact that the regional distribution of the unemployment rate in Poland is inversely related with the size of town. For instance, according to the recent data, the rate was as low as about 3 percent in the capital and as high as 21 percent in the North-East region (OECD, 1998) or even as high as 28 percent if a taxonomy-based regional concentration was used (Malarska, 1998).

⁵³ For example, the residents of the smallest towns (those with fewer than 20,000 inhabitants) were 13 percent more likely to remain outside poverty during the entire period than to enter poverty for one year compared with rural households. Strictly analogous relations with respect to these odds (risks) also applied to the two next groups. The inhabitants of large cities (those with over 200,000 inhabitants) were less likely to become poor or to stay poor for a long time than households in towns with 20,000 to 200,000 inhabitants by about the same fraction.

⁵⁴ A similar tendency held for any other pair of welfare trajectories among those households that had already been experiencing either repeated or prolonged poverty, including persistent and permanent poverty. For instance, persistently poor rural households (three years in poverty) had much lower odds of avoiding permanent poverty than big city households (their odds were 0.87 and 1.5 respectively).

⁵⁵ Compared to villagers, the odds are only 0.54 for a resident (household) in one of the largest cities. In other words, the expected fraction of poor people in metropolitan areas was about half the fraction in rural areas. For big towns, the odds were 0.79; for medium towns, they were 0.88; for small towns, they were 0.93; and for very small towns (with populations below 20,000), they were 0.97. The last figure indicates that there was practically no difference in the risk of being poor in the smallest towns compared to the risk faced by rural households.

The Characteristics of the Household Head: Age, Education, Gender, and Marital Status. These four key features of the head of household represent household's major (exogenous) human capital endowment. Although marital status may not be considered exogenous, it needs to be included (at least as a control variable) because of its connection with age and with gender. For instance, women made up about half of the household heads in the over-65 age group, while they constituted only one-fourth of the youngest group, those up to 35 years old. The model captures these facts by including interactive terms:

$$(2a) \text{ Design: Constant} + \text{TRAJ_Income} + \text{TRAJ_Income*AGE_Group} \\ + \text{TRAJ_Income*EDUCATION} + \text{TRAJ_Income*MARITAL} \\ + \text{TRAJ_Income*SEX}$$

The results are presented in Table B-1 in Appendix B in parallel with the results of model 3 (Appendix B) with main effects only for vulnerability ($Y = 1$ if the household is vulnerable) regressed on the same set of predictors:

$$(3a) \text{ logit } [pr(Y=1)] = \beta_0 + \beta_1 (AGE) + \beta_2 (EDUCATION) + \beta_3 (MARITAL_STATUS) \\ + \beta_4 SEX$$

The results of the first model – the estimated log-odds coefficients (with their standard errors) of being poor for a given number of years with “never poor” as the reference category – show that age and education clearly influenced the risk of falling into poverty or remaining in it for another year. The patterns are consistent with the manner in which these two characteristics affected households’ vulnerability status over time (as well as with the demographic profile of the trajectories discussed in the previous section).

Households headed by younger and by less well-educated people were significantly more likely to fall into poverty (than to stay outside of the poverty zone) compared with households headed by older or better-educated people. The same was true with respect to chronic poverty and to vulnerability status – the older and better educated the household head, the lower the risk of remaining in the poverty zone for another year or of experiencing chronic vulnerability.

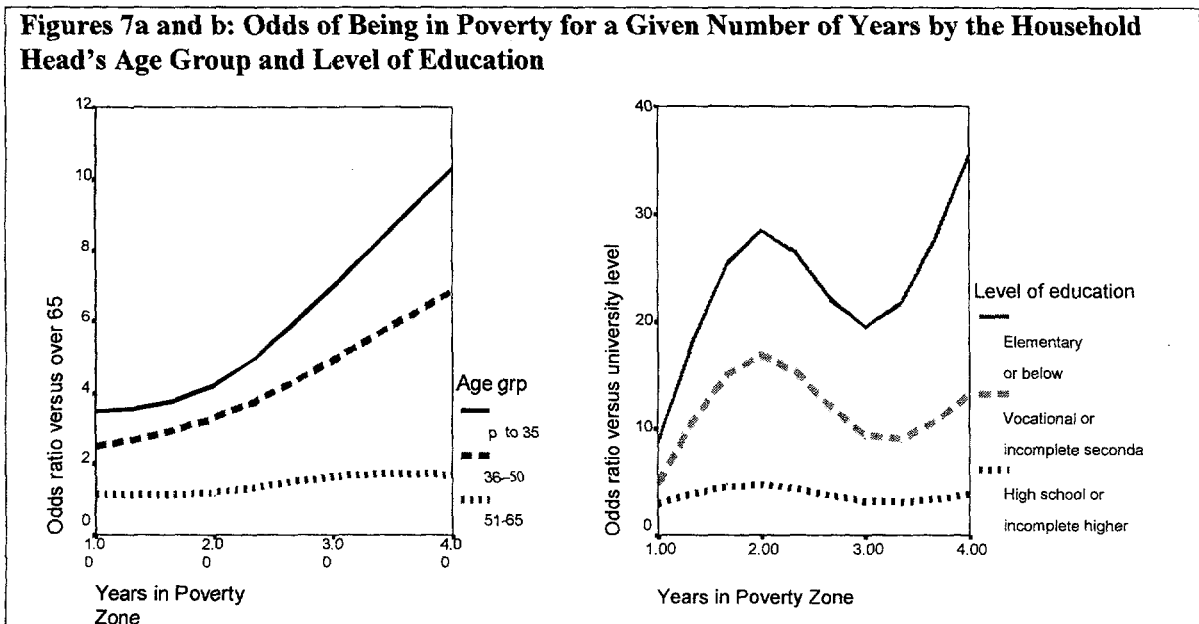
The *age* of the head of the household inversely affected the risk of being chronically poor at a rate that grew incrementally with each additional year spent in poverty among the younger cohorts compared to the older ones. This is particularly visible in Figure 7a below, which presents the odds of being chronically poor for a given number of years for four cohorts with heads aged above 65 years being used as the reference group (not shown in the figure).^{vi}

Despite varying significantly between the cohorts, the odds of experiencing poverty occasionally or repeatedly for up to two out of the four years (not necessary consecutive years) were much less differentiated than the odds of being persistently poor (three years in poverty) or of remaining poor during the whole period. For example, the “youngest” households were 3.5 times more likely to experience one-off poverty than to stay out of poverty during the whole period compared with the odds for the oldest

group. The analogous relative risk of the "middle-aged" households (with heads aged between 36 and 50 years) of experiencing one-off poverty than staying out of poverty during the whole period was 2.5 times greater, while this was only 19 percent for the households headed by people between 51 and 65 years old.

For younger households, the odds of being in poverty for more than two years were dramatically greater than of experiencing one-off or up to two-year poverty whereas, for households headed by people between 51 and 65 years old, these figures were practically identical. The odds for households headed by a person up to 35 years old of experiencing two-year poverty were four times greater than the odds for oldest households (those with heads aged over 65), seven times greater than their odds of experiencing persistent poverty, and 10 times greater than their odds of staying in poverty permanently. For middle-aged households, the analogous odds were three, five, and about seven.

The level of *education* achieved by the household head strongly affects the household's poverty status over time as illustrated in Figure 7b. Compared to households headed by holders of a university diploma (a reference category), other households faced risks that were about three to 35 times higher.⁵⁶



Education is the most important single factor of a household's capacity either to avoid poverty or to reduce the duration of the time spent in poverty, and this effect is apparently even stronger in the case of chronic poverty than in the case of occasional poverty.

⁵⁶ Households headed by high school diploma holders had the lowest risk of being in one-off poverty (three times greater than university diploma holders) rather than avoiding the poverty zone during the four-year period. The highest risk for being permanently poor (rather than being never poor) was faced by households headed by those with no diploma or only an elementary school diploma -- 35 times compared to the risk faced by heads who were university graduates.

For instance, households headed by people with an elementary diploma or with no diploma were nine times more likely to be poor than to remain out of poverty during the four-year period compared with households headed by university diploma holders. This risk declined substantially (by a half to one-third) with each subsequent level of a head's educational achievement. The risk of a repeated poverty experience (either as a multi-year poverty spell or as separate spells of poverty) also declined with each subsequent level of a head's educational achievements. For instance, the odds of becoming persistently poor among those households that were already in two-year poverty were 28 times higher for those households with the least well-educated heads than for households headed by university diploma holders, whereas, for households whose heads held vocational or high school diplomas, it was 17 and only five times bigger respectively. These differences were somewhat smaller for those in three-year poverty but again were greater for four-year poverty.

The estimated log-odds of a household head's *marital status* were much lower, in contrast to the characteristics discussed above, and in most cases hardly significant. The results presented in Table B-1 in Appendix B suggest that practically all other households than households headed by a divorced person (a reference category) were in a better position and faced a lower risk of being poor or chronically poor.

For instance, households with heads who have never been married were 0.65 times less likely than households with divorced heads to be poor for one year rather than to remain out of the poverty zone during the entire period. The analogous odds for households with married heads and those with widowed heads were 0.79 times and 1.14 times respectively. Thus, marital status has no significant impact on households' poverty status over time, except insofar as it points up the somewhat disadvantageous position of widowed or divorced heads.

The head's *gender* -- with females as a reference category -- had a negative effect on the number of years that the household spends in the poverty zone. However, the overall impact of headship was not significant.

The household vulnerability status was tested for the same set of predictors as discussed above. In order to facilitate the presentation of the estimated parameters, they are written here in the form of an equation (involving main effects only):

$$\begin{aligned} \text{logit} [\text{Pr}\{\text{HH is vulnerable}\}] = & -0.1450 - 0.0277(\text{AGE}) + 0.361 (\text{NO_DIPLOMA}) \\ & + 0.879 (\text{ELEMENTARY}) + 0.642(\text{VOCATIONAL}) + 0.276 (\text{HIGHSCHOOL}) \\ & - 0.332 (\text{NEVER_MARRIED}) + 0.0835 (\text{MARRIED}) + 0.053 (\text{WIDOWED}) \\ & - 0.0386 (\text{FEMALE_HEAD}) \end{aligned}$$

The results indicated that almost all of the predictors significantly affected households' vulnerability status.

After controlling for the level of the head's education, marital status, and sex, the age of head had a significant negative impact on households' vulnerability. The null hypothesis (which says that the coefficient for age $\beta_1 = 0$) can be rejected at less than 0.01 significance level.^{vii} In the last column of Table B-1 (Appendix B) is the quantity $\exp(\beta)$ (exponentiation values of the estimated coefficients) in order to facilitate comparison of the (adjusted) odds ratio of two households that differ by a given unit of a characteristic. So the value for a one-year difference in the age of the head was 0.973 after controlling

for other characteristics, and accordingly the odds of being vulnerable decreased as the age of the head increased.⁵⁷

The effect of education on households' vulnerability was also significant and strong. As previously, the reference category was the possession by the head of a university diploma, but this time education was introduced into the calculation as a set of dummy variables and the "no diploma" category was added. The adjusted odds ratio of being chronically vulnerable decreased monotonously as the head's educational achievement increased. Households headed by people without an elementary school diploma were about four times more likely to be vulnerable than households headed by holders of university diplomas.⁵⁸

The marital status of the head of the household also affected the household's vulnerability similarly to the way in which it affected poverty patterns over time. Households with heads that had never been married were less subject to chronic vulnerability than those with married or widowed heads, albeit the coefficients for the last two were small and not significant.

The size of the household is frequently used by analysts and policymakers as a proxy measure of exposure to poverty. In assessing the impact of household size on vulnerability ($Y=1$), it was necessary to control for the composition of the household. The fact that the average size of urban households is, on general, smaller than rural households was captured by including the interaction term for these two variables in the equation below (presented in result form):

$$\begin{aligned} \text{logit}[\text{Pr}\{\text{HH is vulnerable}\}] = & -1.644 + 0.652 (\text{SINGLE_PERSON}) + 0.192 (\text{NUCLEAR_FAM}) \\ & + 0.278 (\text{ONE_PARENT}) + 0.247 (\text{HOUSEHOLD_SIZE}) - 0.644 (\text{URBAN}) \\ & - 0.115 (\text{URBAN} * \text{HH_SIZE}) \end{aligned} \quad ^{59}$$

Compared to "other" households (a reference category), all other types of households faced a higher risk of chronic vulnerability. Households of unrelated individuals were the most vulnerable (almost twice as much as the "others"). The effect of household size (that is, the odds ratio that compares two households whose size differs by exactly one person) was 1.28.⁶⁰ This suggests that the increase in the number of members does not improve the dependency rate. As a consequence, the apparent

⁵⁷ For instance, households headed by x-year old people were 0.87 times less likely to be chronically vulnerable than households headed by people who were five years younger. For a ten-year age difference, the odds ratio was 0.76, which and decreased to 0.44 times for those households whose heads differed in age by 30 years.

⁵⁸ The analogous numbers for other levels of the head's education were: 2.5 times more likely to be vulnerable for those with an elementary school diploma, about twice as likely to be vulnerable for those with a vocational diploma, and 1.32 times more likely to be vulnerable for those with a high school diploma.

⁵⁹ Both the model and each of its estimated parameters were significant (at least at the 0.10 confidence level).

⁶⁰ For instance, having two additional members made the household 1.63 times more likely to be chronically vulnerable, while having three additional members increased the risk to two times more likely, and so on.

advantages enjoyed by large households including diverse income sources and labor supply potential (discussed, for example, by Glewwe and Hall, 1995) might be offset by the overrepresentation of children in large families, especially in urban areas.

The effect of household size was indeed different in the case of urban and rural households, as the estimated parameter of the urban-size variables indicates. For example, the estimated odds for one-person urban households were about half (0.59 times) as large as the odds for (one-person) rural households. The odds for urban and rural households only tended to be equal when the average size of household was 5.5 people, after which, for bigger households, the urban and rural odds changed to the opposite direction. In other words, although smaller urban households are less vulnerable than comparable rural households, very large households were more vulnerable in urban than in rural areas.

Details of these estimations are presented in Figure B-1 in Appendix B.

The Dynamics of Vulnerability and Chronic Poverty.

Two key facts had emerged by this point -- vulnerable households were more likely than other households to fall into long-term poverty and the most significant factors that influenced the both the chronic poverty and the vulnerability status of households over time were the household's composition and the labor status of its members. This suggested that the relationships between these two phenomena should be re-examined while controlling for both factors.

The model presented below was used to estimate the effect of vulnerability on chronic poverty^{viii} – the dependant variable equals 1 if the household spent two or more years in poverty, 0 otherwise – as the effect of an exposure variable. The interaction terms are products of the latter (the exposure variable) and respectively the number of children under the age of 15 in the household and the number of years an unemployed person has been a member of the household.

Because the location of the household and the main source of its income are also important factors in determining its chronic poverty status, the model also took into account the rural-urban distinction and the main source of the household's income – "labor income in urban" and "labor income in rural" versus "non-labor income" (in other words, transfers, regardless of their source, used as a reference category)⁶¹. The model and each of its coefficients, except for the first interaction term, were highly significant; and the estimates were as follows:

$$\begin{aligned} \text{logit} [\text{Pr} \{ \text{Household in chronic poverty} \}] = & -2,9638 + 0.794(\text{VULNERABILITY}) \\ & + 0.459(\text{UNEMPLOYMENT}) + 0.242(\text{CHILDREN}) + 1.102(\text{URBAN_LABOR}) \\ & + 0.4355(\text{RURAL_LABOR}) + 0.114(\text{VULNERABILITY*UNEMPLOYMENT}) \\ & + 0.271(\text{VULNERABILITY*CHILDREN}) \end{aligned}$$

⁶¹ This distinction largely overlaps, but is not identical, with urban-rural demarcation: from among 38 percent of the population living in rural areas exactly two-thirds is directly associated with agriculture; while slightly above one-third (36.7 percent) of 3.06 millions of individual farms reported in 1996 farm-income as their main source of maintenance (compared to 46.7 percent of those with wages and salaries or pensions or non-farm self-employment as major source of income -- Zalewski, 1998).

All of the coefficients were positive. This indicates that the households that faced the highest risk of falling into chronic poverty were those households possessing any of the above attributes as follows:

- vulnerable households were more than twice as likely to fall into chronic poverty as non-vulnerable households;
- households with unemployed members were more likely than others experience chronic poverty, with this likelihood increasing by 58 percent with each additional year the household contained an unemployed member;
- households containing children under the age of 15 were more likely than those with no children to be chronically poor, with this likelihood increasing by 27 percent with each additional child.
- households that lived mainly on labor income in urban areas were three times more likely than those living mainly on income from social transfers to experience chronic poverty, while the same households in rural areas were 55 percent more likely to do so.^{ix}

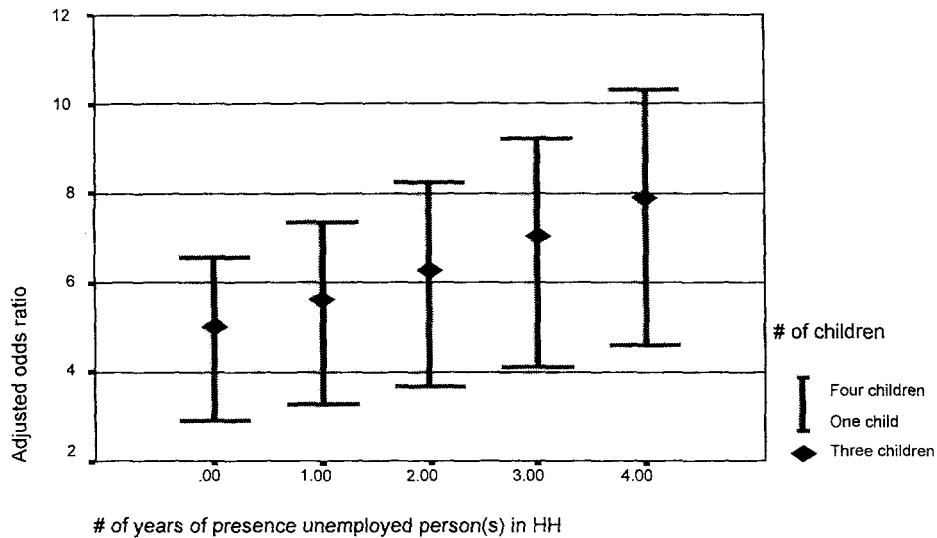
According to the odds ratios adjusted for vulnerability as an exposure variable and for the two effect modifiers, vulnerable households faced a greater risk of being chronically poor (for at least two out of the four years) with each additional child member under 15 years old and with each additional year of having an unemployed member (or members). The effect of having child members was stronger than the effect of having unemployed members - the adjusted odds ratios were calculated on the basis of the estimates presented above (detailed results are available from the author).⁶²

It is worth clarifying the relationship between these two factors since they relate to unemployment compensation and family benefits (which are predominantly child-related allowances). A question that is of particular interest to policymakers is how an increase in the number of children in a household, given the particular employment status of its members, affects the chances of it becoming chronically poor. (Alternatively, it is useful to ask the opposite question – how the number of years that a household member has been unemployed affects the household's chances of falling into chronic poverty given a particular number of children in the household.)

This question was answered by the results presented in Figure 8 below. The risks of families with one, three, or four children falling into chronic poverty were plotted against the number of years during which there was an unemployed person among the household's members.

⁶² The number of years during which one of the household members was unemployed raised the risk of being chronically poor from 2.5 times for one year of unemployment to 3.5 times for four years of unemployment. However, a similar increase in the number of children, from one to four children, raised the risk from about three times for one-child family to six times for family with four children. In other words, the elasticity of the risk of being chronically poor was, on average, higher with each additional child in a household (75 percent) than with each additional year of unemployment in household (about 25 percent).

Figure 8: The Odds Ratio for the Effect of a Household's Vulnerability on Chronic Poverty by the Number of Children under 15 and by the Duration of Unemployment among Household Members



The effect of the number of children on the risk faced by the vulnerable household of being chronically poor grew incrementally along with the number of years during which there was an unemployed person among the household's members. The adjusted odds for a one-child family were about three times those of a childless household and, for a family with four children, they were 6.5 times those of a childless household if there were no unemployed people in the household during the whole period. For those households that did have a permanently unemployed member during that period, the odds were about five to above 10 times respectively.⁶³

The dynamics of chronic poverty and vulnerability were greatly affected by the number of children and the incidence of unemployment in the household. Since the number of children was a stronger factor than the duration of unemployment in increasing households' risks of being chronically poor, it can be presumed that the benefits that relate to each of these factors – child-related family allowances and unemployment compensation – are not equally effective in reducing long-term poverty.

⁶³ For instance, families with three children may have faced a five times higher risk of being chronically poor if there was no unemployment incidence in the household to an eight times higher risk if some of the household members were unemployed each year. However, among those households that experienced three-year unemployment, the risk was three times greater for those families without children under the age of 15, four times greater for families with one child, and seven to nine times greater for families with three or four children.

If one would like to comprehend the long-term poverty in Poland, while summing up in a 'functional' form the results discussed so far, then the following factors ought to predominate among the 'predictors' of an appropriate equation:

Unemployment incidence among HH members	Household human capital (head's education and HH composition)	Fertility level (number of children at pre-high school age)	Locality (urban-rural and region)
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Indeed, if a regression was run in a version that reflects such a conceptualization, the following OLS-estimates provide quantitative approximation of the respective relationships:

$$\begin{aligned} \{\text{Years in poverty}\} = & 1.8776 - 0.148\{\text{SCHOOL_Years of HH_head}\} + 0.308 \\ & \{\text{UNEMPLOYMENT_Years in HH}\} + 0.316\{\text{Number of children aged 14 and below}\} - 0.205 \\ & \{\text{URBAN}\} +/-(.)\{\text{Dummies for 9 regions}\}, \text{ and } R^2 \text{ adj} = 0.21. \end{aligned}$$

[All coefficients are significant -- details are available from the author or from the unit.]

Non-human Household Assets.

How households' non-human endowments affect their poverty patterns and vulnerability status was addressed using the log linear logit model. Table B in Appendix B is an excerpt from the results from this model. It presents the odds ratio of either remaining outside of the poverty zone during the whole period or falling into poverty for a given number of years (compared to being permanently poor, which was the reference category).

The results show that some physical and financial assets owned by households had a positive effect – by reducing the household's risk of falling into long-term poverty – and others had negative effects. (The consumption-based trajectory was used in this case.)^x

Possessing a savings account or a car or receiving help from other households substantially reduced a household's risk of falling into poverty or remaining in it for a long period of time. Also the probability of being chronically vulnerable was significantly smaller for households having these assets than for those without them. Selling durables or real estate also reduced the risk of both poverty and vulnerability, but not significantly.⁶⁴ Being a net recipient of private transfers also made households less exposed both to a repeated poverty experience and to vulnerability. Those households that received such

⁶⁴ For instance, households that possessed savings accounts were about twice as likely to remain outside of poverty (compared to being permanently poor) during the four-year period than those households that did not have a savings account. Among those who fell into poverty, households that possessed savings accounts were 30 percent more likely than those households that did not have a savings account to pull themselves out of poverty after one year rather than becoming permanently poor. Also, they were 16 percent more likely to do so after two years. Such households were also 39 percent less likely to be chronically vulnerable than households without a savings account.

transfers during at least three out of the four years were 45 percent more likely not to fall into poverty at all than to be permanently poor compared to households who were not net recipients of transfers.⁶⁵

Households with some kinds of physical or financial assets were over-represented among the chronically poor or vulnerable, although this does not imply any causal explanation. For instance, households that are already poor take advantage of credit disproportionately more often than households that have never been poor. In particular, credits from informal sources are used more often by households already experiencing chronic vulnerability (the coefficient for formal credit is not significant for vulnerability), perhaps because these households have limited access to resources from financial institutions. Similarly, households that live in their own house or apartment⁶⁶, or that possess a plot of land, are also over-represented among the chronically poor or vulnerable. Given that these two assets overwhelmingly prevail among rural households, this result is not surprising as it is consistent with the fact, which has already been established, that rural households are at greater risk of falling into repeated poverty and vulnerability than urban households.^{xi}

Summary

It needs to be stressed that all of the major human capital variables significantly affected households' poverty and vulnerability status over time. The segment of the population that was relatively more successful in avoiding or minimizing chronic poverty and vulnerability during 1993-96 included those living in urban areas, those headed by older and better educated people, those with few children and unemployed members, and those possessing some financial or physical assets.

While the vulnerability status of a household increased its risk of experiencing long-term poverty, the chances that a vulnerable household would fall into chronic poverty were enhanced if it contained many children or unemployed members. This raises the question of whether the relevant social programs – family allowances and unemployment benefits – are performing effectively given that these families are facing a greater risk of either falling into poverty or remaining in it for a longer period of time than others.

⁶⁵ For the poor who were the net-recipients of private transfers, the odds of coming out of a spell of poverty rather than being permanently poor were 10, 11, and 20 percent for households in one-, two-, and three-year poverty respectively.

⁶⁶ This corresponds with the findings of other studies – that owning housing or durables has had an almost negligible impact on households' poverty status in several post-communist countries (including Ukraine and Russia -- see Milanovic, 1998).

Notes

- i. Some terminological convenience may be adopted for labeling the different types of poverty patterning over time (based here on the number of years in the poverty zone) while ignoring their sequencing. (this nomenclature follows the one used in the PSID papers – for example, Hill, 1992):
- One year poverty is said to be transient or one-off poverty, that is, a single spell off poverty lasting a single year;
 - Two or three years in poverty can be called chronic poverty, although it covers three types of possible time sequencing: (i) repeated spells of poverty that were never separated by more than a year of relative prosperity; (ii) persistent poverty if a single spell of poverty has lasted between two to three years; and (iii) pervasive transient poverty or recurrent poverty if repeated spells of poverty are either separated by more than a year and some exceeding a year in length;
 - Four years in poverty is called permanent poverty if it lasts continuously for such a period of time.
- ii. If quintiles of equivalent consumption in real terms were used, the knowledge of someone's position on this welfare scale would result in the following predictions of fractions experiencing poverty repeatedly during the four-year period (given by estimation of the actual fractions – as in Figure A-2 in Appendix A, which presents the distribution of the sample over the quintiles for 1993): the poorest fifth – 4/5; the second fifth – 1/5; the middle fifth – 1/10; the fourth fifth – 1/25 and the top fifth 1/45.
- iii. In addition to urban-rural differences, the socioeconomic group or the sex of the head of household variables also exemplified essentially invariant characteristics. However, a household was not excluded if, due to divorce or death, the "original" household head was replaced during the subsequent wave of the panel. *Quasi-invariant* characteristics changed from time t to $t+1$ only at the margin if there were no changes across the units of analysis. For instance, the age of head of household increases with subsequent waves of the panel without introducing any change between cohorts over time. Other characteristics were either more likely to remain unchanged than changed during the period being studied – such as the head's level of education – or the scope of their change could be assessed, and dealt with accordingly, in the analysis. They were predominantly related to household composition, particularly the head's marital status, or the type of family, and they were either used to characterize the "initial conditions" or were "fixed" by excluding those who changed their original category during the period being studied.
- iv. Locality: 1. Large city (500,000 and more). 2. Town from 200,000 to 500,000. 3. Town from 100,000 to 200,000. 4. Town 20,000 to 100,000. 5. Town below 20,000. 6. Village.
- v. For checking the stability of estimates of the relationship between poverty status over time and the category of place of residence, the locality 1994 was replaced by the same variable for 1996. All estimates remained practically unchanged, confirming that urban households are overall in a better position than rural households (by about the same odds ratio) at the beginning and the end of the period under study.
- vi. The values in the figure are calculated on the basis of results shown in Table B-1 by exponentiating the log odds coefficients.
- vii. In contrast to the loglinear logit model that was previously used, in the logistic regression model, the age predictor was used as a continuous variable.
- viii. Chronic poverty status was defined using the household equivalent consumption-based trajectory.
- ix. There is no inconsistency between this result and the previously discussed results on the effect of locality that suggested that rural households are more likely to be chronically poor. Rather, this suggests that compared to pensioners (a major group of transfer recipients), urban households are in a less privileged position or in an even worse position, than rural households.

x. In addition to the variables that were preliminary reviewed in Part I, a few other indicators were included in the model used below for analyzing determinants of poverty patterns and vulnerability status over time respectively. They were dummies indicating whether or not a household had the following assets during the period of the study:

- its own house (half of the sampled households);
- a plot of land (about one-sixth of households), and
- a car (on average, nearly every second household possessed one).

xi. In the equation for the impact of non-human asset endowments on vulnerability (results are not presented here but are available on request from the author) also included was an indicator of residual savings, distinguishing the households that had such savings during each year of the four-year period (about one-quarter) from others. In order to take into account the difference in saving behavior of “young” and “older” households, the head’s age was entered into the equation as a modifier of the impact of saving on the household’s vulnerability status. In other words, the interaction terms for residual saving and head’s age were included in the logistic regression equation. The residual saving indicator affected vulnerability in the same manner (but not as much significantly) as the indicator of possessing a savings account by reducing the risk of being chronically vulnerable among those having such savings, although the two indicators have been constructed completely independently of each other. Because of the interaction term, it was possible to assess the effect of savings on household vulnerability status at the different levels of the head’s age. For instance, the odds ratio of being vulnerable for a household headed by a person aged 25 years old and having savings was 0.93 times as large as for the same type of household (headed by someone of the same “age”) that did not have any savings. The difference disappeared – the odds were equal – for the households headed by people aged 40 and increased linearly with age. (For instance, a household with a head aged 55 was 11 percent more likely to be vulnerable than the households that did have residual savings).

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Panel Data 1993 - 1996

The data used in the analysis came from the Household Budget Survey, which is conducted annually by the Polish Central Statistical Office (GUS). The survey yields rich information on the income, expenditures, and demographic characteristics of households using a diary system of data collection from a nationwide probability sample of between 31,000 to 32,000 households. The methodologies and classifications used in the survey are consistent with international standards (as elaborated by the EUROSTAT).

The survey was profoundly modernized in 1993.⁶⁷ A monthly rotation of subsamples replaced the quarterly rotation system, and coverage was increased -- the entire non-institutionalized population is now covered. In addition to the households that had previously been surveyed -- those belonging to the "major socioeconomic groups" (workers, farmers, a mixed group of worker-farmers, and pensioners), the survey now also includes households headed by self-employed people and by those living mainly off social benefits other than pensions (in other words, recipients of welfare -- such as unemployment benefits, social assistance, alimony allowances, or private transfers from other households or charity sources).

The Household Budget Survey is a cross-sectional survey but has an explicit panel component (using a *split-panel* technique -- see Kordos, 1995). In the rotation of subsamples, exactly half of the households are surveyed in the same month during a period of four consecutive years. There were two panel segments used during the period 1992-96, one comprised of the households that participated in the survey from 1992 to 1995 and the second comprised of those that participated in it from 1993 to 1996. Therefore, the four-year panel 1993-96 embraces, theoretically, about one-quarter of the cross-sectional sample (instead of a half). However, due to cases of non-response and to attrition, the effective size of the four-year panel is about 5,000 households (4,919 households were used in this analysis).

Before analyzing the data, it was necessary to address the problem created by the fact that non-interviewed cases are not fully randomly distributed across the households over time.⁶⁸ While a typical annual non-response rate was about 31 percent from 1993 to 1996, the year-to-year attrition rate was about 12 percent during that period. This amounted to about 38 percent of total attrition among the households that were designated to participate in the survey from 1993 to 1996. The relatively highest rate of attrition was among the households classified as self-employed, while the lowest was among the households of farmers. For example, during 1995-96, their respective attrition rates were 14 percent and 9 percent (GUS, 1996).

In order to indicate the direction of any possible bias, the cross-sectional and panel observations by various major characteristics and measures are compared below. The differences between the cross-sectional and the panel data are, for the most part, not substantial (although, given the large size of the sample, they are often statistically significant). As expected, the panel data show a tendency to downward rather than upward bias in the possible estimates of welfare measures (reflecting the fact that relatively more affluent households are, on average, slightly less likely than poorer households to continue to participate in the survey over the long term).

⁶⁷ See Garner, Okrasa, Smeeding, and Torrey (1991) for a discussion that compares the old survey to income surveys in Czechoslovakia and Hungary. For a more detailed description of the new survey, see GUS (1993).

⁶⁸ See Deaton (1997) for discussion of the advantages of the system of sample rotation as the one adopted in the Polish HBS.

Since the differences are, to some extent, due to the fact that the average size of the households in the 1993-96 panel is bigger than the average size of the cross-sectional households, using the equalized measures of income and consumption (the OECD equivalence scale was used in this study) may partly offset this attrition effect. However, there is no difference in the size-income distribution – the Gini coefficient is practically the same between the cross-sectional and panel households. In the table below, all income and consumption measures are in per capita real terms (for the first quarter of 1993).

Table A-1. Household Budget Survey 1993-96: Comparing panel and cross-sectional data sets -- selected characteristics of households and persons

Measures	Households in Four Year Panel				Cross-sectional Surveys			
	1993	1994	1995	1996	1993	1994	1995	1996
1. Number of Households	4919	4919	4919	4919	32111	32085	32009	31907
2. Urban (# of units)	2980	3036	2965	2965	21244	21561	21064	21106
3. Urban %	60,58	61,72	60,28	60,28	66,2	67,2	65,8	66,1
4. Rural (# of units)	1939	1883	1954	1954	10867	10524	10945	10801
5. Rural %	39,42	38,28	39,72	39,72	33,8	32,8	34,2	33,9
6. Number of persons: Total	16821	16562	16319	16009	104582	104232	103565	101837
7. Children under 18	5326	5125	4886	4704	31810	31634	30926	29699
8. Elderly	1262	1355	1436	1528	8824	8995	9094	9175
9. Size of Household	3,42	3,37	3,32	3,25	3,26	3,25	3,24	3,19
10. Head's Age	47,28	48,01	48,68	49,60	47,89	48,19	48,38	48,66
11. Head's School years	10,63	10,69	10,71	10,73	10,75	10,81	10,84	10,88
<i>Socioeconomic group</i>								
12. Employees	2209	2112	2056	2023	14652	14167	14067	14008
13. Farmers	336	314	317	304	1878	1788	1815	1673
14. Worker-Farmers	529	512	485	458	2579	2454	2290	2120
15. Pensioners	1471	1577	1670	1763	10301	10766	10857	11013
16. Self-employed	216	246	235	241	1607	1696	1742	1816
17. Social welfare	158	158	156	130	1094	1214	1238	1277
<i>Real Income per capita⁶⁹</i>								
18. Household disposable income	148.34	149.42	156.43	165.33	155.48	156.25	159.33	171.03
19. Wages and salaries	65.11	64.43	67.35	72.46	69.56	71.07	72.63	79.42
20. Farm income	19.74	20.56	22.41	20.79	16.87	15.78	17.03	15.51
21. Self-employment non-farm	6.79	8.10	8.39	10.32	9.66	10.19	10.75	12.45
22. Income from social	47.33	48.43	51.07	53.90	48.86	49.95	50.99	53.96
23. Pensions	35.46	37.98	41.45	44.65	37.29	39.20	41.21	43.88
24. GINI of HH disposable income	.3153	.3169	.3132	.3154	.3147	.3213	.3166	.3242
25. GINI of HH consumption	.3111	.3109	.3141	.3216	.3137	.3203	.3148	.3283

⁶⁹ In real terms as of 1st Quarter 1993

Table A-2. Correlation of the household asset endowments and other characteristics with number of years in the poverty zone and with vulnerability during 1993-96 (values of *t*-statistics)

Characteristics	Trajectory 1993-96, by income	Welfare path 1993-96, by consumption	Average changes during 1993-96 in:		Differences 1993-96 in Consumption (Logarithm)	Vulnerability by income and consumption
			income	consumpti on		
Human endowment indicators						
Household size	35.60	36.61	4.03	4.55	4.80	9.33
# of children 1993	34.15	31.25	4.05	2.26	2.77	9.49
# of elderly 1993	-8.07	-4.99	1.51	-0.27	0.17	-3.95
Dependency ratio 93	34.15	31.25	4.05	2.26	2.77	9.49
Disabled in HH	-1.29	0.20	1.30	2.42	2.59	-1.36
Female headed HH	-5.10	-4.13	1.57	5.00	1.10	-2.43
Age of HH head	-19.09	-17.43	2.53	2.15	2.25	-8.39
Head's education years	-9.62	-10.47	0.40	2.29	2.44	-5.19
Physical Endowment/Assets and Transfers						
Saving account	-8.08	-8.96	-0.92	2.50	2.63	-4.65
Formal credit or loan	5.17	3.22	-2.26	0.28	0.27	1.19
Informal credit/loan	10.31	6.34	-1.48	0.41	0.63	1.99
Selling durables etc.	2.54	1.05	0.26	0.63	0.55	1.13
HH participate in private transfers	-6.53	-9.42	0.73	3.73	3.85	-5.32
Other: Socioeconomic group						
Employees	-2.24	1.76	-2.97	0.82	0.68	0.92
Farmers or mixed	16.05	9.30	1.50	-3.24	-3.40	4.35
Pensioners	-16.24	-13.83	1.31	1.68	1.66	-6.15
Self-employed	1.15	-1.85	-1.94	-1.17	-1.10	0.90
On welfare	15.30	12.70	4.02	1.70	2.38	2.89

*) Values smaller than |1.60| are not statistically significant; greater than |1.60| to |2.13| are significant at the level 0.10; greater than |2.13| to |3.50| are significant at 0.05; greater than |3.50| are significant at 0.01 or higher.

Figure A-1. Composition of household income 1993-96

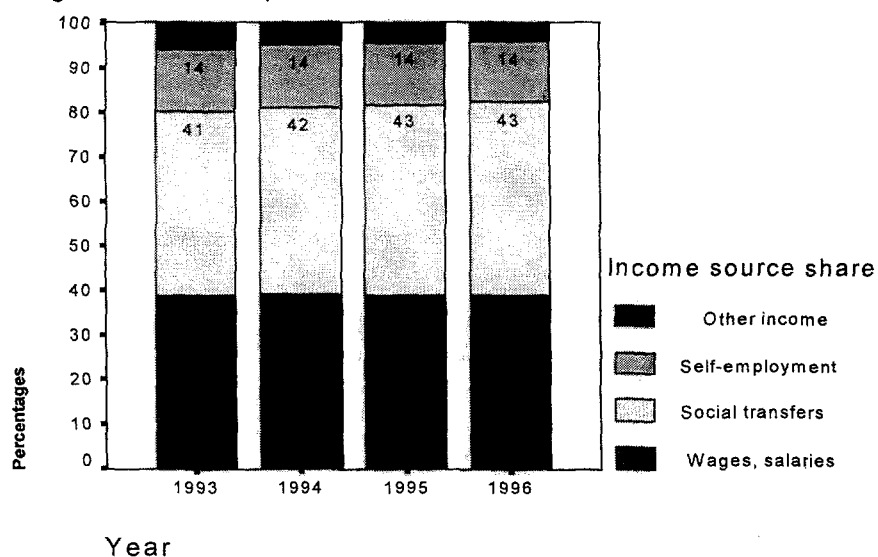
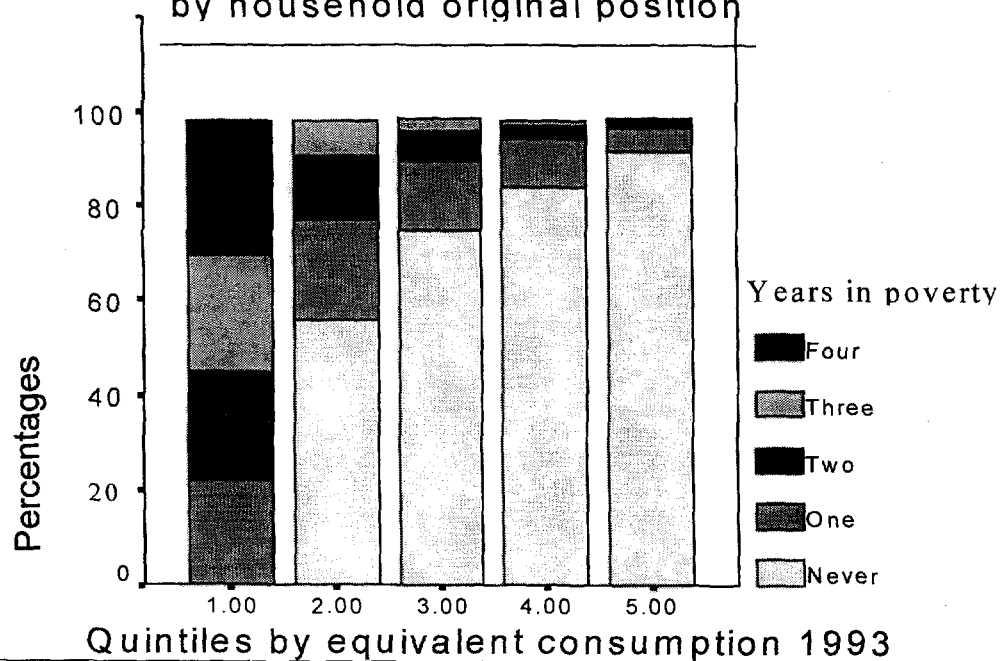


Figure A-2. Number of years in poverty by household original position



Model description

The first type of model – the linear-by-linear association – was employed initially in order to establish a relationship between poverty patterning and the vulnerability status over time. Actually, both of these two variables play the role of dependent variables in this section ⁷⁰. Since they were defined independently of each other, it is importance to know the degree to which being vulnerable affects the odds of being poor for another year, compared with non-vulnerable.

The following version of the model was used for poverty patterning (trajectory) and vulnerability:

$$(1) \quad \ln(m_{ij}) = \mu + \lambda_i^{\text{welfare_trajectory}} + \lambda_j^{\text{vulnerability}} + BU_i V_j;$$

where μ represent the constant and lambdas are the main effects parameters, and B is a regression coefficient multiplied by the scores U and V assigned to the cell at i row and j column.

Since the number of categories of welfare path (five) is a relatively large number – and each of them is worth analyzing individually, rather than in combination with some other category – the class of feasible models reduces practically to the logit loglinear model. Therefore, the multinomial logit model for categorical dependent variable – in the version of polychotomous logit model – is to be employed as the second type of analytical tool:

$$(2) \quad P_{ij} = P(Y=j/Z_i) = \exp[b'_j Z_i] / \sum_{j=1}^J [\exp(b'_j Z_i)]; \text{ where } P_{ij} \text{ denotes the probability that the household with the characteristics vector } Z_i \text{ will be found in } j\text{-category of the welfare path.}^{71}$$

A vulnerability function (that is envisioned as a logistic function) was estimated using the logistic regression model allowing one to describe in probabilistic terms whether a household with a given set of characteristics is more likely to experience a systematic decline in its welfare measures over time than other households:

$$(3) \quad \Pr(Y=1) = 1 / \{1 + \exp[-(\beta_0 + \sum_{j=1}^k \beta_j X_j)]\} \text{ where } X_j \text{ is a vector of predictor variables}^{72}$$

⁷⁰ The term 'dependent' variable in log-linear models is used in a somewhat different sense than in a multiple regression, as all variables are classifications and the number of cases in a cell of crosstabulation is treated as a dependent variable.

⁷¹ The form of the employed multinomial logit model (MNL) follows Maddala (1983).

⁷² See Kleinbaum et al., (1998, Chapter 23).

**Table B-1. Effect of the household head's characteristics on poverty patterning
(multinomial logit analysis) and vulnerability (logistic regression)**

Characteristics	NUMBER OF YEARS IN THE POVERTY ZONE				VULNERABILITY STATUS	
	Never in Poverty Zone	One year in Poverty Zone	Two years in Poverty Zone	Three years in Poverty Zone	VULNERABILITY B-COEFFICIENT	Exp(B)
Constant	7.1801 (0.6846) ^a	3.1424 (0.7379)	1.7444 (0.8131)	0.4285 (0.4242)	-0.1450 (0.2401)	na
<i>Age</i>					-0.0277 (0.0029)	0.9727 (0.9672)
Below 35 years	-3.3326 (0.3820) 0.03 ^b	-1.2749 (0.4152) 0.279	-1.0645 (0.4455) 0.345	0.3188 (0.5021) 1.375		
35 to 50	-2.7480 (0.3669) 0.064	-1.1349 (0.3991) 0.321	-0.9515 (0.4287) 0.386	-0.2410 (0.4850) 0.786		
51 to 65	-0.8029 (0.3819) 0.448	-0.3512 (0.4167) 0.704	-0.3882 (0.4489) 0.678	0.1679 (0.5041) 1.183		
Above 65 (omitted)	0 (1)	0 (1)	0 (1)	0 (1)		
<i>Education</i>						
No diploma					1.3607 (0.2257)	3.8990 (2.5052)
Elementary (or below)	-3.5004 (0.5178) 0.030	-1.3659 (0.5559) 0.255	-0.8933 (0.6164) 0.409	-0.1686 (0.7211) 0.845	0.8789 (0.1385)	2.4563 (1.8725)
Vocational or Incomplete high school	-2.5681 (0.5133) 0.077	-1.2266 (0.5529) 0.293	-0.4283 (0.6114) 0.652	0.1224 (0.7171) 1.130	0.6418 (0.1363)	1.8999 (1.4546)
High school or incomplete university	-1.4127 (0.5271) 0.243	-0.5937 (0.5679) 0.552	-0.2831 (0.6294) 0.753	0.3103 (0.7332) 1.364	0.2763 (0.1404)	1.3182 (1.0012)
University (omitted)	0 (1)	0 (1)	0 (1)	0 (1)	0 (1)	0 (1)
<i>Marital status</i>						
Never married	2.1172 (0.5448) 8.308	1.5027 (0.5689) 4.494	1.5470 (0.6034) 4.697	0.9937 (0.6346) 2.701	-0.3318 (0.1889)	0.7176 (0.4956)
Married	-0.2862 (0.2859) 0.751	-0.4982 (0.3338) 0.608	-0.2494 (0.3750) 0.779	-0.1556 (0.3789) 0.856	0.0825 (0.1532)	1.0860 (0.8042)
Widowed	0.2859 (0.3988) 1.331	-0.1677 (0.4369) .846	0.0384 (0.4857) 1.039	0.1626 (0.4915) 1.177	0.0529 (0.1766)	1.0543 (0.7458)
Divorced (omitted)						
<i>Sex</i>						
Male	-0.0542 (0.1573) 0.947	0.1267 (0.1769) 1.135	0.2333 (0.1938) 1.263	-0.1191 (0.1963)	0 (1)	0 (1)
Female	0 (1)	0 (1)	0 (1)	0 (1)	-0.0386 (0.0810)	0.9622 (0.8209)

a) Standard error. b) Odds ratio. N = 4919

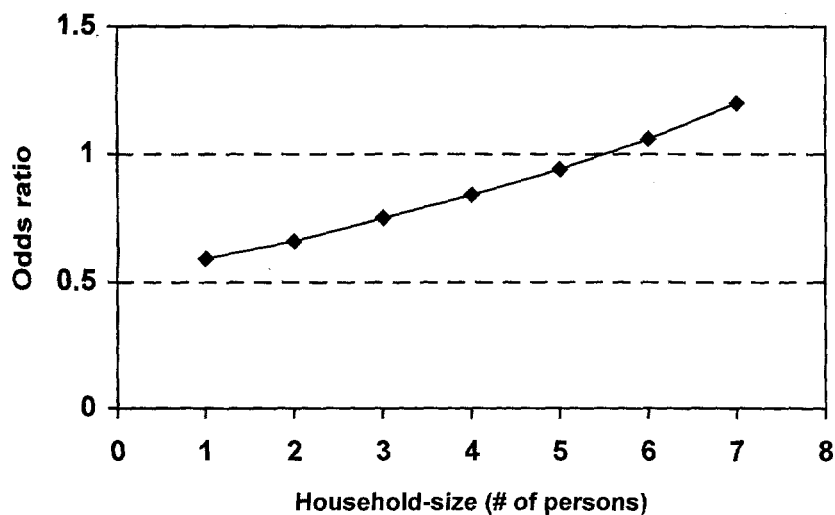
(For Multinomial Logit Analysis)

	Chi-Square	DF	Sig.
Likelihood Ratio	364.1065	468	.9999
Pearson	457.3594	468	.6288

Table B-2. Effect of households nonhuman asset endowments on number of years in poverty -- the odds ratio

	Number of years in poverty zone				
	none	one	two	three	four
<i>Positive association</i>					
- saving account	1.87	1.30	1.16	1.15	0 (1)
- capital income	3.04	1.21	2.14	0.96	0 (1)
- private transfers	1.45	1.01	1.11	1.20	0 (1)
- selling durables etc.	1.01	1.06	1.32	1.18	0 (1)
- possessing car	2.12	2.10	1.84	1.61	0 (1)
<i>Negative association</i>					
- formal credit	0.70	0.69	0.64	0.78	0 (1)
- informal credit	0.70	0.95	0.91	1.05	0 (1)
- possessing a plot of land	0.74	0.64	0.56	0.70	0 (1)
- owning a house	0.50	0.85	0.84	1.02	0 (1)

Figure B-1. The odds ratio of being vulnerable for urban households of a given size compared to rural households



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